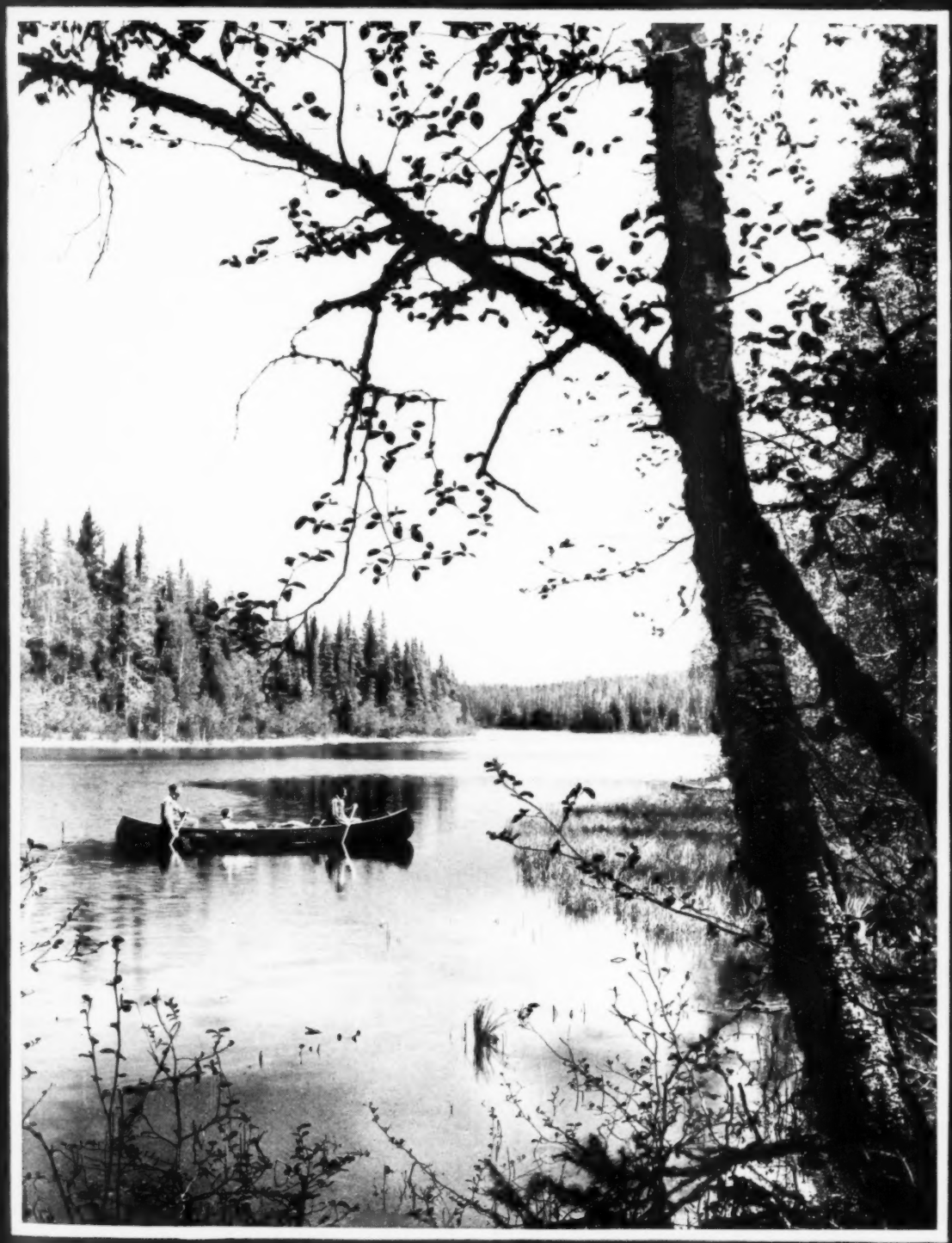
AMERICAN FORESTS



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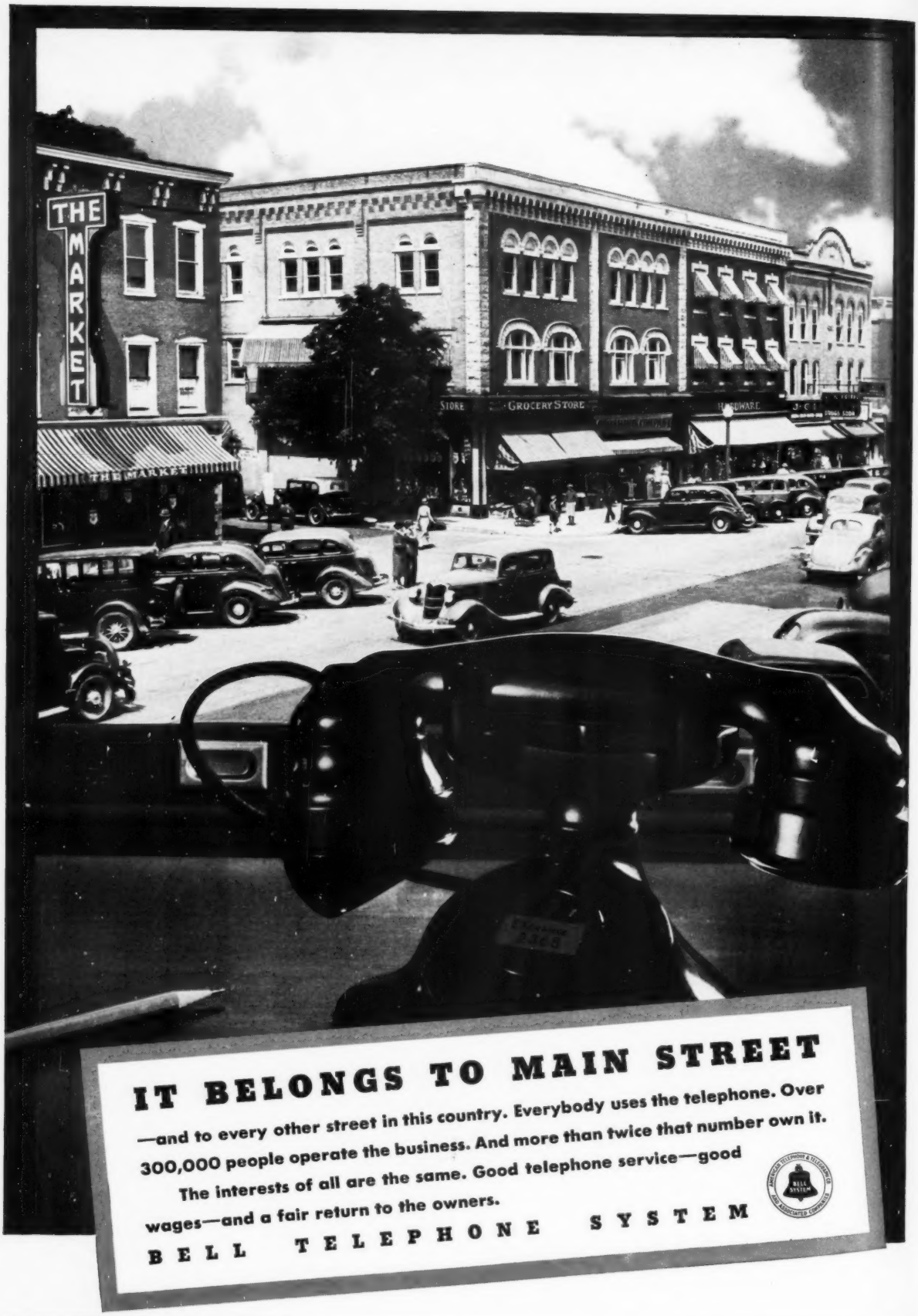

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NEXT MONTH

A million and a half acres of forest land lying within seventy-five miles of ten million people—these are the Jersey Pines, often called the Cinderella among American forests. In the November issue Reginald D. Forbes, director of the Allegheny Forest Experiment Station, will tell of their possibilities of usefulness to mankind—possibilities unique in the entire world.

"Timber Ships" is Stewart H. Holbrook's latest contribution to AMERICAN FORESTS—and it is one of his best, a dramatic story of ocean-going log rafts as long as the *Queen Mary*.

And so will Grif Alexander be back in the November issue with "A'wing"—a timely subject presented in his usual delightful style.

There will also be "Johnny Woodcock" by Harry Botsford, another writer familiar to the readers of AMERICAN FORESTS. Seymour Houghton, a newcomer, will be introduced with a truly fascinating story of France—"The Forest of Tronchais." And, of course, there will be others.

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Member A. B. C.

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Upper Green River Lake

WILDERNESS

■ Preservation of extensive examples of the American wilderness has become within the past ten years one of the objectives of American conservation. The movement is based primarily upon recognition of: (1) the growing social needs of our people for recourse to undefiled nature for rest, recreation and mental and spiritual inspiration; and (2) the scientific and educational value to this and future generations of representative examples of primitive nature unchanged and unmarred by man. Advocates of wilderness preservation hold that the future land pattern of the country as a whole calls for the setting apart and guarding against needless destruction a reasonable number of primitive regions typifying original American landscapes.

With this movement The American Forestry Association is in full accord. Indeed the Association led the movement when in 1925 it publicized the need of public action to save before it is too late some of the swiftly vanishing remnants of American wilderness. At the same time, it initiated a campaign to crystallize public sentiment into a demand for a wilderness policy in the conservation work of the Federal Government. From that beginning the movement has grown rapidly both in public support and public action. Today both the National Forest and Park Services have officially adopted wilderness policies and are setting apart back country sections of the National Forests and Parks for maintenance of wilderness conditions. Sixty-nine such areas, aggregating thirteen and one-half million acres, have thus far been officially designated as "primitive areas" in the National Forests by the Secretary of Agriculture and portions of many of the National Parks have been delineated as wilderness sanctuaries by the Secretary of the Interior.

One of the vital problems in wilderness preservation today is to protect established areas against local and political pressure for roads and other forms of so-called development. The Association holds that when an area of public land upon investigation and study will best serve national needs as a wilderness reservation, maintenance of its primitive environment should be assured by congressional action giving it legislative status rather than leaving its future to the hazards of changing bureau or department policies.

Note—In this space is presented each month the Association's policy with respect to timely phases of conservation.

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The Editor's Log

PRESERVATION of the National Parks depends first and last upon keeping them natural. Keeping them natural depends upon keeping them free of commercial developments and entanglements. Early in his administration Secretary of the Interior Harold L. Ickes, declared before a park meeting:

"So long as I am Secretary of the Interior and have anything to say about the parks, I am going to use all the influences I have to keep parks as far as possible in their natural state."

To that declaration all friends of the National Parks gave hearty and sincere applause.

History marches on. The National Parks are and always have been sanctuary to all forms of wildlife—native and exotic. Latest addition to national parkdom is the camel. It has recently been "planted" in the Rocky Mountain National Park in Colorado.

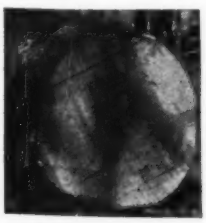
The ordinary camel is a docile, faithful animal. The variety "planted" in the Colorado sanctuary, however, is a vicious breed. It is better known as the camel of commercialism. Once given range in natural resource territory it breeds rapidly and with predatory vengeance.

As predicted in this column two months ago, Congress on July 25—and over the protest of friends of the National Parks—approved and appropriated $900,000 for an underground conduit through Rocky Mountain National Park for the development of irrigation and hydro-electric power.

Interested spectator of this extraordinary proceeding was Secretary Ickes, commander-in-chief of the National Parks, who helped make the project possible by allocating $150,000 of PWA funds for a survey of the park as a possible route for the conduit. For twenty years, Secretaries before him had fought and fought successfully to keep commercialism out of the National Parks but at the critical moment Secretary Ickes in effect gave silent consent to the invasion by sitting on the fence and saying he did not know whether the project was a good thing or not. So history, I fear, will record him as the first Secretary of the Interior to wilt before a high pressure political drive upon the National Parks.

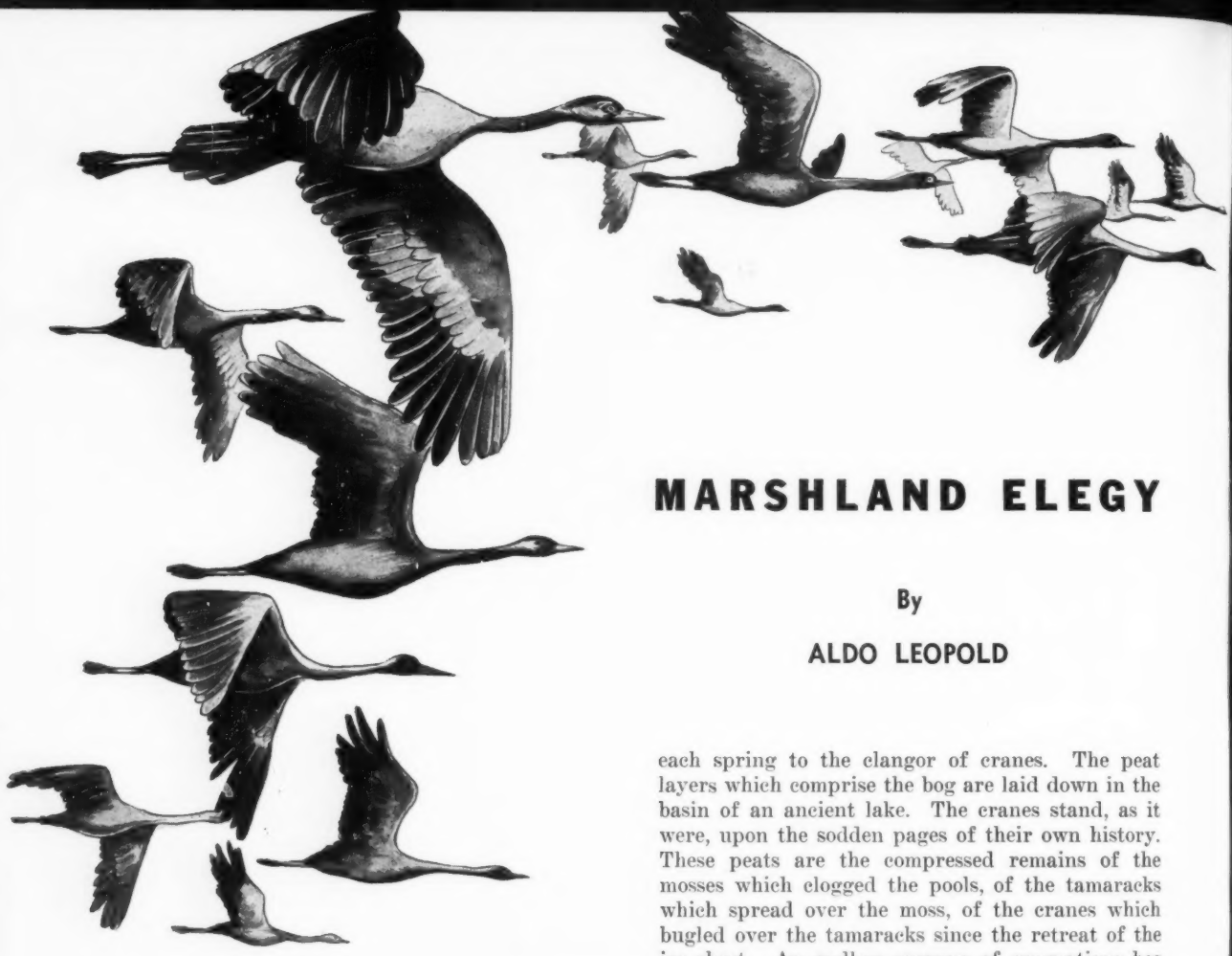
But, now that the camel of commercialism has been admitted, what is to be done about it? Conservationists did not oppose the Colorado project because they do not want Coloradians to have needed water and power but because they consider maintenance of the non-commercial principle of the National Parks of greater national value than the local project. Congress and Secretary Ickes by their acts, however, apparently hold that its economic value as a highway for water diversion and power development transcends this principle.

This being the case, rational and honest thinking would dictate that the status of the park area be changed to that of National Forest where economic use of resources is in accord with forest principles and national policy. Such action would be frank and honest recognition of the different fundamental purposes of National Parks and National Forests and it would free the National Park system of a predatory animal now within its portals that may eventually destroy one of the finest conservation accomplishments of all time.



Ona Burton

Editor



MARSHLAND ELEGY

By

ALDO LEOPOLD

A DAWN-WIND stirs on the great marsh. With almost imperceptible slowness it rolls a bank of fog across the wide morass. Like the white ghost of a glacier the mists advance, riding over phalanxes of tamarack, sliding across bog-meadows heavy with dew. A single silence hangs from horizon to horizon.

Out of some far recess of the sky a tinkling of little bells falls soft upon the listening land. Then again silence. Now comes a baying of some sweet-throated hound, soon the clamor of a responding pack. Then a far clear blast of hunting horns, out of the sky into the fog.

High horns, low horns, silence, and finally a pandemonium of trumpets, rattles, croaks and cries that almost shakes the bog with its nearness, but without yet disclosing whence it comes. At last a glint of sun reveals the approach of a great echelon of birds. On motionless wing they emerge from the lifting mists, sweep a final arc of sky, and settle in clangorous descending spirals to their feeding grounds. A new day has begun on the crane marsh.

A sense of time lies thick and heavy on such a place. Yearly since the ice-age it has awakened each spring to the clangor of cranes. The peat layers which comprise the bog are laid down in the basin of an ancient lake. The cranes stand, as it were, upon the sodden pages of their own history. These peats are the compressed remains of the mosses which clogged the pools, of the tamaracks which spread over the moss, of the cranes which bugled over the tamaracks since the retreat of the ice sheet. An endless caravan of generations has built of its own bones this bridge into the future, this habitat where the oncoming host again may live and breed and die.

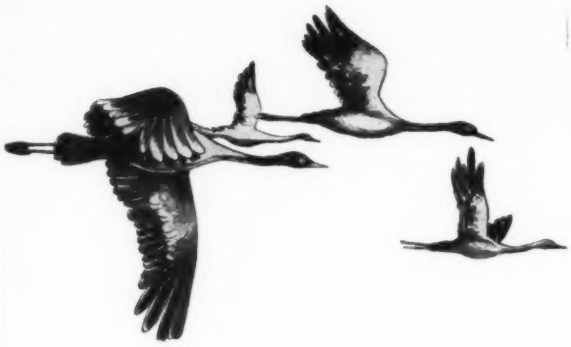
To what end? Out on the bog a crane, gulping some luckless frog, springs his ungainly hulk into the air and flails the morning sun with mighty wings. The tamaracks re-echo with his bugled certitude. He seems to know.

* * * * * *

Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values as yet uncaptured by language. The quality of cranes lies, I think, in this higher gamut, as yet beyond the reach of words.

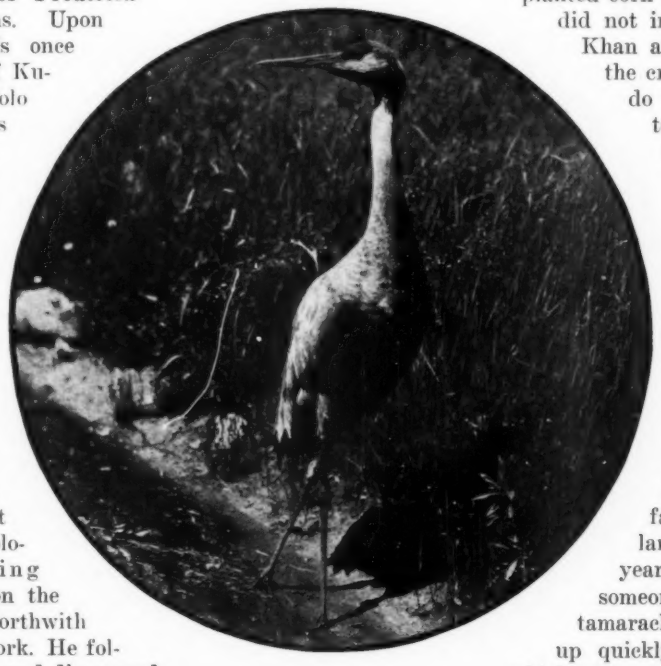
This much, though, can be said: Our appreciation of the crane grows with the slow unravelling of earth history. His tribe, we now know, stems out of the remote Eocene. The other members of the fauna in which he originated are long since entombed within the hills. When we hear his call we hear no mere bird. We hear the trumpet in the orchestra of evolution. He is the symbol of our untamable past, of that incredible sweep of millenia which underlies and conditions the daily affairs of birds and men.

And so they live and have their being—these cranes—not in the constricted present, but in the



wider reaches of evolutionary time. Their annual return is the ticking of the geological clock. Upon the place of their return they confer a peculiar distinction. Amid the endless mediocrity of space, a crane marsh holds a paleontological patent of nobility, won in the march of aeons, and revocable only by shotgun. The sadness discernible in some marshes arises, perhaps, from their once having harbored cranes. Now they stand humbled, adrift in history.

Some sense of this quality in cranes seems to have been felt by sportsmen and ornithologists of all ages. Upon such quarry as this the Holy Roman Emperor Frederick loosed his gyrfalcons. Upon such quarry as this once stooped the hawks of Kublai Khan. Marco Polo tells us: "He derives the highest amusement from sporting with gerfalcons and hawks. At Changanor the Khan has a great Palace surrounded by a fine plain where are found cranes in great numbers. He causes millet and other grains to be sown in order that the birds may not want." The ornithologist Bengt Berg, seeing cranes as a boy upon the Swedish heaths, forthwith made them his life work. He followed them to Africa and discovered their winter retreat on the White Nile. He says of his first encounter: "It was a spectacle which eclipsed the flight of the roc in the Thousand and One Nights."



Wilderness Incarnate—
The Sand Hill Crane

* * * * * *

When the glacier came down out of the north, crunching hills and gouging valleys, some adventuring rampart of the ice climbed the Baraboo Hills and fell into the outlet-gorge of the Wisconsin River. The swollen waters backed up and formed a lake, finally cut around the hills and drained it. To the remaining lagoons came the cranes, bugling the defeat of the retreating winter, summoning the on-creeping host of living things to their collective task of marsh-building. Floating bogs of sphagnum moss clogged the lowered waters, filled them. Sedge and leatherleaf, tamarack and spruce successively advanced over the bog, anchoring it by their root fabric, sucking out its water, making peat. The lagoons disappeared, but not the cranes. To the moss-meadows which replaced the ancient waterways they returned each spring to dance and bugle and rear their gangling sorrel-colored young. These, albeit birds, are not properly called chicks, but *colts*. I cannot explain why. On some dewy June morning watch them gambol over their ancestral pastures at the heels of the roan mare, and you will see for yourself.

One year not long ago a French trapper in buckskins pushed his canoe up one of the moss-clogged creeks that thread the Great Marsh. At this attempt to invade their miry stronghold the cranes gave vent to loud and ribald laughter. A century or two later Englishmen came in covered wagons. They chopped clearings in the timbered moraines which border the marsh, and in them planted corn and buckwheat. They did not intend, like the Great Khan at Changanor, to feed the cranes. But the cranes do not question the intent either of glaciers, emperors, or pioneers. They ate the grain, and when some irate farmer failed to concede their usufruct in his corn, they trumpeted a warning and sailed across the marsh to another farm. There was no alfalfa in those days, and the hill-farms made poor hay land, especially in dry years. One dry year someone set a fire in the tamaracks. The burn grew up quickly to bluejoint grass, which, when cleared of dead trees, made a dependable hay meadow. After that, each August, men appeared to cut hay. In winter, after the cranes had gone South, they drove wagons over the frozen bogs and hauled the hay to their farms in the hills. Yearly they plied the marsh with fire and ax, and in two short decades hay meadows dotted the whole expanse.

Each August when the haymakers came to pitch their camps, singing and drinking and lashing their teams with whip and tongue, the cranes whinnied to their colts and retreated to the far fastnesses. "Red shitepokes" the haymakers called them, from the rusty hue which at that season often stains the battleship-gray of crane plumage. After the hay was stacked and the marsh again their own the cranes returned, to call down out of October skies the migrant flocks from Canada. Together they wheeled over the new-cut stubbles and raided the corn until frosts gave the signal for the winter exodus.

These haymeadow days were the Arcadian age for marsh dwellers. Man and beast, plant and soil lived on and with each other in mutual toleration, to the mutual benefit of all. The marsh might have kept on producing hay and prairie chickens, deer and muskrat, crane-music and cranberries forever.

The new overlords did not understand this. They did not include soil, plants, or birds in their ideas of mutuality. The dividends of such a balanced economy were too modest. They envisaged farms not only around, but *in* the marsh. An epidemic of ditch-digging and land-booming set in. The marsh was gridironed with drainage canals, speckled with new fields and farmsteads.

But crops were poor and beset by frosts, to which the expensive ditches added an aftermath of debt. Farmers moved out. Peat beds dried, shrank, caught fire. Sun-energy out of the Pleistocene shrouded the countryside in acrid smoke. No man raised his voice against the waste, only his nose against the smell. After a dry summer not even the winter snows could extinguish the smoldering marsh. Great pockmarks were burned into field and meadow, the scars reaching down to the sands of the old lake, peat-covered these hundred centuries. Rank weeds sprang out of the ashes, to be followed after a year or two by aspen scrub. The cranes were hard put, their numbers shrinking with the remnants of unburned meadow. For them, the song of the power shovel came near being an elegy. The high priests of progress knew nothing of cranes, and cared less. What is a species more or less among engineers? What good is an undrained marsh anyhow?

For a decade or two crops grew poorer, fires deeper, weed-fields larger and cranes scarcer year by year. Only reflooding, it appeared, could keep the peat from burning. Meanwhile cranberry growers had, by plugging drainage ditches, reflooded a few spots and obtained good yields. Distant politicians bugled about marginal land, overproduction, unemployment relief, conservation. Economists and planners came to look at the marsh. Surveyors, technicians, CCCs, buzzed about. A counter-epidemic of reflooding set in. Government bought land, resettled farmers, plugged ditches wholesale. Slowly the old bogs are rewetting. The fire-pocks become ponds. Grass fires still burn, but they can no longer burn the wetted soil.

All this, once the camps are gone, will be good for cranes, but not so the thickets of scrub popple which spread inexorably over the old burns, and still less the maze of new roads which inevitably follow governmental conservation. To build a road is so much simpler than to think of what the country really needs. A roadless marsh is seemingly as worthless to the alphabetical conservationist as an undrained one was to the empire-builders. Solitude, the one natural resource still undowered of alphabets, is so far recognized as valuable only by ornithologists and cranes.

Thus always does history, whether of marsh or marketplace, mice or men, end in paradox. The ultimate value in these marshes is wildness, and the crane is wildness incarnate. But all conservation of wildness is self-defeating, for to cherish we must see and fondle, and when enough have seen and fondled, there is nothing left to cherish.

* * * * * *

Some day, perhaps in the very process of our benefactions, perhaps in the fulness of geologic time, the last crane will trumpet his farewell and spiral skyward from the great marsh. High out of the clouds will fall the sound of hunting horns, the baying of the phantom pack, the tinkle of little bells, and then a silence never to be broken, unless perchance in some far pasture of the Milky Way.

OLD MAN PLANTS A TREE

The old man plants a tree;
With pain, now, does he bend
And kneel to spread the roots. Not he
Nor any of his age shall spend
One single hour beneath its shade
Nor eat its fruit that is to be,
For soon he shall be subject to the spade;
Yet graciously the old man plants a tree

BERT L. ROBINSON.
In the *Los Angeles Times*

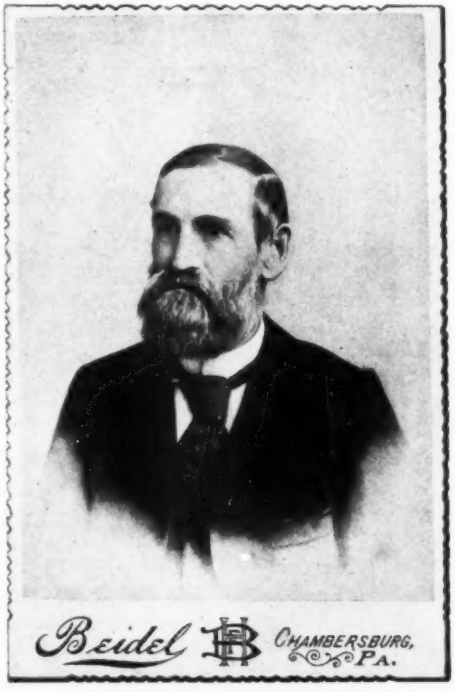
"EXPLORERS'" CAMP MAURER,
Blue Ridge Summit Franklin Co., Pa., July. 1884.

THE EXPLORERS: By EDWIN F. WEAVER

AFTER a visit during the summer of 1936 to the sixty-fifth annual camp of The Explorers at Pine Grove Furnace, in Michaux Forest, one of Pennsylvania's beautiful Appalachian woodland areas, a feature writer on a Sunday newspaper gave expression to his feelings somewhat as follows:

If I had six and twenty sons,
  And each son had a brother,
And none of them would lift a hand,
  Each lazier than the other,
I'd send them all to Pine Grove Camp,
  And tell each no-'count oaf
To study the Explorers Club
  And learn to really loaf.

For more than forty years before the 55,000 acres that make up Michaux State Forest became the property of the Commonwealth of Pennsylvania, this camping club of professional and business men calling themselves The Explorers had pitched their tents as fancy led them on the slopes of Tuscarora, Kittatinny and Blue Ridge Mountains. However, when the Michaux became a state forest, the first application for a lease-hold in the area was filed by Charles C. Schriver, then secretary for The Explorers. That was in 1913. Since then the annual camp has been held in the forest at Pine Grove Furnace.



BENJAMIN LATROBE MAURER
The first secretary of The Explorers

According to some old notes by Benjamin Latrobe Maurer, the first secretary of The Explorers, "the idea of a camping club had its inception in the minds of Albert Hummel, Jerome T. Barnitz, John J. Rebman and Leonard Kinnard of Harrisburg; David M. Eiker, Jacob Spangler, Jacob L. Dechert and Benjamin L. Maurer of Chambersburg. These gentlemen, being warm personal friends and belonging to about the same grade of society, conceived the idea of spending a few days on or about the mountains, to enjoy the bracing atmosphere, the cool water, and the attractive scenery. The

whole company of eight gentlemen secured a pair of horses and an ambulance from William H. McKinley, a liveryman of Chambersburg, and started for Horse Valley, having met by previous arrangement on a Tuesday in July, 1869. After driving the greater part of the day they drew rein at Barrel Spring, on land which was the property of a Mr. Rosenberry and whose permission they secured to camp and fish for a few days."

The next camp was not held until the summer of 1872 when the same group, augmented by the addition of two men from Harrisburg and three from Chambersburg, pitched a camp by Duncan's Run in Path Valley. During this outing they formed an organization, adopted a name, were regularly incorporated, and have camped annually since that year, without intermission, thereby establishing a record which is probably unequalled by any similar organization in America.

By-laws of the organization stipulate that the roster shall at no time contain more than twenty-four active members and no man is eligible for membership until he shall have spent three full camping periods of twelve days each as a novitiate. Having thus qualified, he is elected to membership when a vacancy occurs by death or resignation. There are usually two or three eligibles on the waiting list and less than one hundred men have been actual members during the sixty-five years of the club's history. None of the pioneer members, campers of 1872, are living now but the oldest living member has attended forty-one consecutive camps—first as a guest in 1896 and as a member after 1901, having served a probationary period of six years before a vacancy occurred. There are no published rules governing the general behavior of the campers but, by common consent, no member or guest takes any intoxicating drink to camp nor do they play cards. Thus are misunderstandings reduced to a minimum and these observances probably account, in large measure at least, for the longevity of the organization.

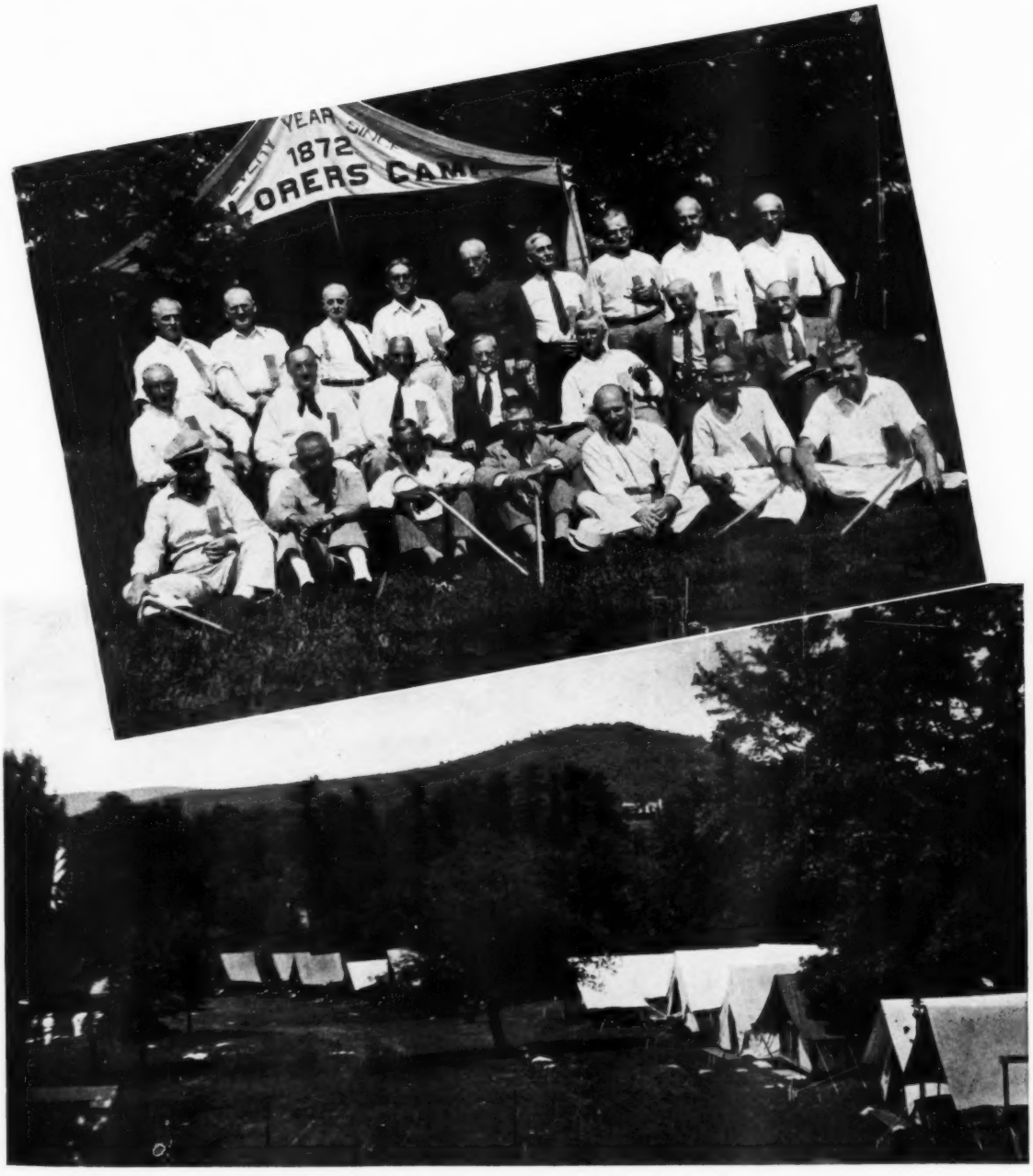
The Explorers of 1922 at Pole Steeple

Records of the club do not reveal any stated reason for adopting the name "Explorers" nor is there any specific statement as to why members address each other as "Colonel" and refer to the probationers as "Brevets." A probable reason for the military title was the general practice of veterans in the period immediately following the Civil War of hailing each other as "Captain" or "Colonel" and some, if not all, of the original members had served in the Northern army. The name "Explorers" may have been suggested by the fact that visits were made to many places of interest within reasonable walking distance of the camps. Historical notes covering activities of the early camps have frequent entries such as "The party tramped to the top of Cove Mountain and return" or "The cascade in Duncan's Run was particularly grand and it was voted the place *par excellence* of wild mountain scenery".

The following excerpt from "Kittochtinny Historical Society Papers" Volume 2, in the Pennsylvania State Library at Harrisburg, is informative regarding some of the activities of the campers:

"Outside of that organization known as the 'Colonels' or 'Explorers' there are few persons well acquainted with the location, the temperature, the specific gravity and the elevation above tide water, of the springs which have their openings in the tops, sides and eastern slopes of the Kittatinny and Tuscarora Mountains and the western slopes of South Mountain. One of their number (The Explorers), Dr. Charles T. George, for many years secretary of the Pennsylvania State Pharmaceutical Society, whenever the party camped in a new location, brought with him an American Barometer for finding elevations, a hydrometer for testing the specific gravity, and a thermometer for determining the temperature of any spring within several miles of camp. The temperature of ninety per cent of the springs was found to be fifty-two degrees Fahrenheit, and only one spring was found that registered a lower temperature. This was Gun Spring, in Path Valley, and it registered fifty degrees where the water comes from the ground."

A search of the old records reveals that "a tramp was made to the Devil's Race Course (see



Annually since 1872 The Explorers, a camping club of professional and business men, have enjoyed the forest beauty of Pennsylvania's mountains. They are shown here in camp at Pine Grove Furnace, in Michaux Forest, during the summer of 1936

photo on page 475, upper left), a wonderful specimen of Nature's freakishness, being a peculiar formation nine hundred and fifty feet long, one hundred and twenty-five feet wide, entirely devoid of vegetation, covered with rocks of various sizes, but leveled and graded as if for some specific purpose and situated on the mountain-side fourteen hundred and twenty-five feet above tide water".

At another time Secretary Maurer writes poetically as he records a trip to the Cascades, a wild and rocky waterfall on Red Run, "where we found a grand display of the power of those hidden forces which make the earth a fitting place for the habitation of man".

Activities of the original group were not confined to the exploration of scenic beauty and rock formations, however, as the following paragraph, taken from a diary of the camp of 1886, bears witness: "On Monday afternoon the famous snake hunters, Ogelsby, Bergstresser, Santo and George visited the Rattlesnake Den from which they returned with nine large (*Continuing on page* 509)

REDWOODS OF THE SANTA CRUZ--

A LOGGING SAGA

By R. C. WILSON

DOWN the cool, dark aisles of a strange new forest that golden day in October a party of Spanish adventurers threaded its way. The year was 1769 and the party was the intrepid Portola expedition, discoverers of San Francisco Bay.

This forest on the seaward slope of what are now the Santa Cruz mountains near Watsonville, California, was indeed "unlike anything ever seen in Spain", in the words of Father Crespi, chronicler of the party. The trees with their tall, massive trunks bulking from fifteen to twenty feet in diameter and towering over 300 feet in height were the largest yet seen by any white man. The reddish, gnarled stems etched in light and shadow against a background of deep green must have stirred the feelings of even the most hardened explorer.

Father Crespi in speaking of these trees wrote: "They have a very different leaf from cedars, and although the wood resembles cedar somewhat in color, it is very different, and has not the same odor; moreover, the wood of the trees that we have found is very brittle. In this region there is a great abundance of these trees, and because none of the expedition recognizes them they are named 'redwood' from their color."

The Santa Cruz redwoods of that day, forming the southern extension of the great redwood empire, spread over the mountains a fog-bound cloak of timber which averaged thirteen miles in width and fifty miles in length, extending from sea level up the mountain side to an elevation of 2,500 feet.

One grass and woodland-edged border of that great forest was washed by the waters of the Pacific. To the south it fringed the lower mountain slopes of Loma Prieta where the Santa Cruz mountains dip towards Monterey Bay. Fifty miles to the northwest it softened the rough outlines of Kings Mountain at the northernmost limit of this same range. To the northeast it was hemmed in by sunny Santa Clara Valley.

Six hundred and fifty square miles or nearly half a million acres—that was the Santa Cruz mountain empire over which the lofty *palo colorado* or redwood of the early Spanish-Californian period held sway. Only a fraction of this forest remains today, but on hill and valley its history has been indelibly engraved by ax and fire.

Probably the first redwoods to be cut by man were taken under the supervision of the early Mission Fathers, and used in building the Mission Santa Clara in 1777. It must have been a tremendous task to bring the huge rough-hewn timbers from the mountain nearly a dozen miles away across the valley to the old Mission site where they were put in place by Indian workmen. About a decade later, when Santa Cruz Mission was founded in 1791, the records reveal that Indian workers under the direction of the Franciscan Friars were engaged in making lumber for the Mission buildings from nearby stands of redwood.

The Spanish Californians were mostly concerned with an indolent pastoral life and so did not make serious inroads on the redwoods. No doubt the virgin stands maintained themselves as well under the Spanish regime as in the Indian period. Fires which were of common occurrence prior to the Spanish occupation continued to sweep the forest unchecked, but could not overthrow the redwoods' dominance. Fire-scar records indicate that a mighty redwood could be seared repeatedly before finally falling. Even then, fast-growing sprouts would rapidly fill the opening left by the death of the parent tree.

But a new era in political and economic history was appearing on the California horizon and with it a greater activity of ax and saw broke in upon the long silences of the forest. As early as 1832 in the vicinity of Corralitos, in Santa Cruz County, a grantee of that locality, Jose Amesti, was manufacturing shingles and timbers. However, it was in the late thirties and early forties that men began to realize the commercial value of the wood available in these seemingly inexhaustible forests. These pioneers in commercial lumbering were the restless advance-guard of Americans, Englishmen and Frenchmen who were drifting into this new land of opportunity.

In 1838 a small company of men were industriously engaged in whipsawing lumber by hand near Santa Cruz. Some of this product was sold to local settlers and a small quantity shipped out to other parts on coastwise schooners. In the same year the Russian settlement at Fort Ross, north of San Francisco, was shipping hand-sawed redwood out of the country. These two operations constitute the extent of the lumbering industry on the California coast at that time. From that date on, however, the lumbering interests in the coast ranges assumed a definite commercial importance.

Beginning in 1842 with the first power sawmill known to be erected in California, the history of

HISTORY IN THE LIFE OF A REDWOOD

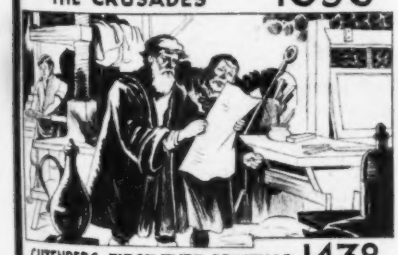
BUILDING THE PYRAMIDS 3000 B.C.

FALL OF TROY 1184 B.C.

BIRTH OF CHRIST 4 B.C.

SACKING OF ROME 455 A.D.

THE CRUSADES 1096



GUTENBERG, FIRST TYPE PRINTING 1438

COLUMBUS DISCOVERS AMERICA 1492

1620 LANDING OF THE PILGR

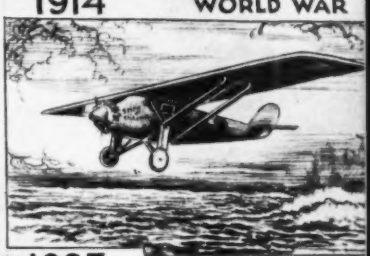
1776 DECLARATION OF INDEPENDE

1815 NAPOLEON AT WATERLO

1863 LINCOLN'S GETTYSBURG ADD

1901 TRANS-OCEANIC WIRELE

1914 WORLD WAR



1927 LINDBERGH'S FLIGH

redwood lumbering in this region is a colorful tale of restless activity. This first watermill built by Isaac Graham on Zayante Creek, five miles north of Santa Cruz, marked the inauguration of an industry which ranked as the leading business of Santa Cruz County and adjacent communities for a full half century; and even now it supports several mills in the remaining virgin timber areas.

In the heyday of its reign during the '80's and '90's, the industry supported no fewer than twenty-five sawmills within a five-mile radius of Boulder Creek alone. From dawn to dark the hills echoed with the shouts of the ox drivers on the skid trails and a constant pall of dust hung over the wagon roads where teamsters and mule teams plied their loads of lumber towards San Jose, Santa Cruz, or down through the roaring lumber camp of Woodside to Redwood City on San Francisco Bay.

In a beautiful primeval area — a fraction of the redwoods in the original Santa Cruz stand

There were four quite distinct periods in the lumbering history of the redwoods, and as each period typified a different treatment of the land, the vegetation cover at present exhibits a variety of conditions. These periods with correspondingly different methods of logging and milling and approximate dates are:

1. Period of hand sawing in pits with little or no logging—prior to 1842.
2. Water-powered and early steam-powered mills with ox logging—1842-1875.
3. Steam-powered sawmills with ox and low-powered logging—1876-1905.
4. Modern sawmills with modern logging—subsequent to 1905.

In general the activities of the earliest lumbering period changed the appearance and composition of the virgin forest but slightly, whereas the period of modern logging has produced the most striking changes in vegetation cover. The best stands of second growth redwood as well as remains of the original forest are generally found on areas logged under early cutting methods. With the transition through the years to the present high-powered forms of timber removal, a corresponding change has occurred in land treatment. The tracts logged in more recent years show but small traces of the former virgin forest and yield instead a successional cover of brush and woodland species.

The first lumber turned out in the redwoods was in the form of rough boards sawed by hand. The early procedure was to fell the tree and saw it into logs in place. A pit was dug nearby, the logs placed over it, and the job of sawing the logs

lengthwise into boards begun. Two men took part in this work, one man pulling the hand saw from the upper side of the tree, the other sawyer working on the lower side in the pit. These crude types of logging operations, sporadic and scattered as they were in character, changed but little the composition of the forest. A few trees were removed but in external appearance the illusion of virgin redwood land still remained. In the forest as it stands today a few moss-covered stumps and vegetation-covered saw pits remain as the only vestiges of this earliest lumbering period.

The redwood forest removed—bare land showing the results of modern logging and burning

Naturally the volume of lumber produced in this fashion was small and in a short time the more ambitious lumber workers were seeking more efficient means of production. Soon came the introduction of oxen to haul logs and the utilization of water to furnish power for portable mills.

In the virgin forest there are three main associates which are invariably found with redwood (*Sequoia sempervirens*), namely, Douglas fir (*Pseudotsuga taxifolia*), in the upper canopy; and tanoak (*Lithocarpus densiflora*); and madrone (*Arbutus menziesii*), in the understory.

The madrone was the first to be widely exploited. The best madrones were removed long before the rest of the forest was cleared and were converted into charcoal to be used in black powder manufacture. This charcoal burning and powder manufacturing proved a lucrative business to many early woodsmen. Another employment engaged in by these forest settlers was the stripping of tanbark from the tan-oak trees, to be hauled by pack train or wagon to the tanneries. This particular occupation

(*Continuing on page* 510)

Replacement of redwood forest by brush, three years after logging—an acute fire menace

IN "TRAIL RIDER" COUNTRY

BY ERLE KAUFFMAN

—Sarnia Marquand

Concealed in the remotest corners of our western National Forests are the last secret strongholds of nature — little kingdoms of the primitive that seem fresh from the Creator's hand, so untouched are they by the great spoilers.

Not a Yellowstone among them, of course, nor a Grand Canyon; but what they lack in phenomena is overshadowed by their pure wilderness character and their spectacular scenery. Age-old solitudes they are, where grandeur has been sustained by wind and dew and sunshine and rain bestowed with wise love upon the good earth. Wild kingdoms, untamed and unharnessed, holding in trust the remnants of the magnificent wilderness that was once America.

On the official maps and in the records of a protecting government these remnants are designated as "Primitive Areas." They have been set aside by the Secretary of Agriculture to be maintained in their natural state for the furtherance of science, for the protection of great watersheds, and for the enjoyment of the people. So long as their status remains that of Primitive Area, there will be no development or improvement. The areas will remain roadless, uninhabited, unmarked kingdoms.

But since these great wildernesses—ranging in size from 500,000 to nearly 2,000,000 acres—begin where the highway ends, and may be entered only by means of dim trails, enjoyment on the part of the people has been confined mostly to scattered hunters and fishermen who, with small pack outfits, spend a few days in season along their fringes. Rarely, if ever, in the greater areas, do many travelers, pleasure bent, invade the deeper regions, the true wilderness.

That is, of course, with the exception of the Trail Riders of the Wilderness. To this unique group of men and women organized in 1933 by The American Forestry Association, these far-flung primitive kingdoms are veritable Edens. To an increasing number of wilderness lovers these undisturbed regions of our western National Forests are rapidly becoming known and revered as "Trail Rider" country.

And as Trail Rider country they are performing one of their greatest services to mankind. The simple and inexpensive means provided by the Association through the Trail Riders makes it possible for almost anyone to satisfy his inherent longing for adventure and for physical exploration in wild country, to dwell awhile amid the untouched beauty and splendor of the primitive.

The remote Flathead and Sun River Wilderness in Montana, for instance, where more than a million acres of the little known Northern Rockies form the rugged "back country" of the Flathead and Lewis and Clark National Forests. Six expeditions of Trail Riders have ventured into this great area of lofty mountains and lake-studded valleys—the latest entering from Missoula on July 4, returning twelve days later a healthy, happy and highly enthusiastic group. It was into this vast wilderness that the first Trail Rider expedition rode in 1933.

Then there is the land of the famous old Jim Bridger, the most dramatic wilderness, perhaps, remaining in continental United States—the high Wind River Wilderness in the Wyoming National Forest, in Wyoming. Here is the bold "top country" of the Rockies, with its unique ice fields, sparkling lakes, timberline trees and rugged canyons—a country possessing all of the charm that boldness of outline, distance, breadth and color can possibly bestow on any landscape. The 1937 expedition of Trail Riders was in this land from July 18 to 31—the third to successfully explore this bold region—where glaciers vie with purple daisies for glory.

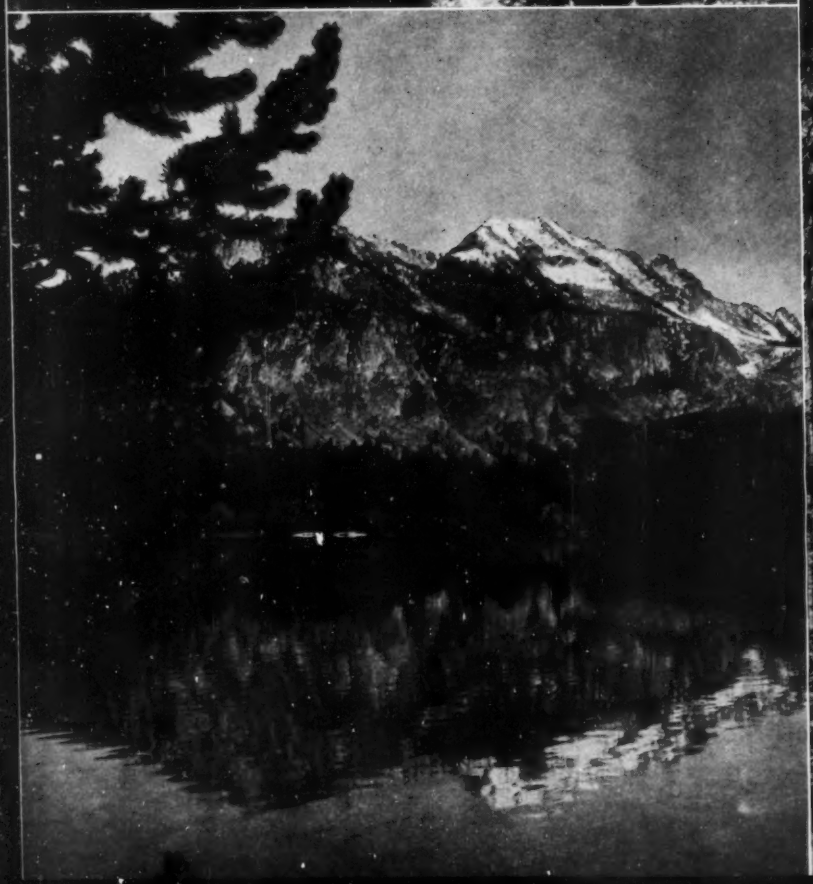
Close by, as the eagle flies, in the storied Sawtooth Mountains of Idaho, one of the seven expeditions of Trail Riders to take the field this summer pioneered the way into the upper reaches of the Sawtooth National Forest—a wild kingdom of mountains and pines and silver lakes, as inviting to the wilderness lover as any land under the sun. Twenty-five riders, many of them veterans of two or more expeditions, made up this party which was in the wilderness from August 2 to 15.

About the same time the Sawtooth riders were getting under way from Sun Valley, another party was gathering far to the south to explore an area where nature has preserved the glory of an ancient people in a splurge of wild grandeur—the wilderness of the Gila, the land of the American aborigines, hidden away in the Gila National Forest, in New Mexico. Mighty canyons that may be compared with the Grand Canyon in color and beauty if not in immensity; cliff dwellings that lie undisturbed in natural surroundings; broad forested mesas where herds of antelope roam; mountain peaks that tower above it all—this is the wilderness of the Gila. The 1937 expedi-

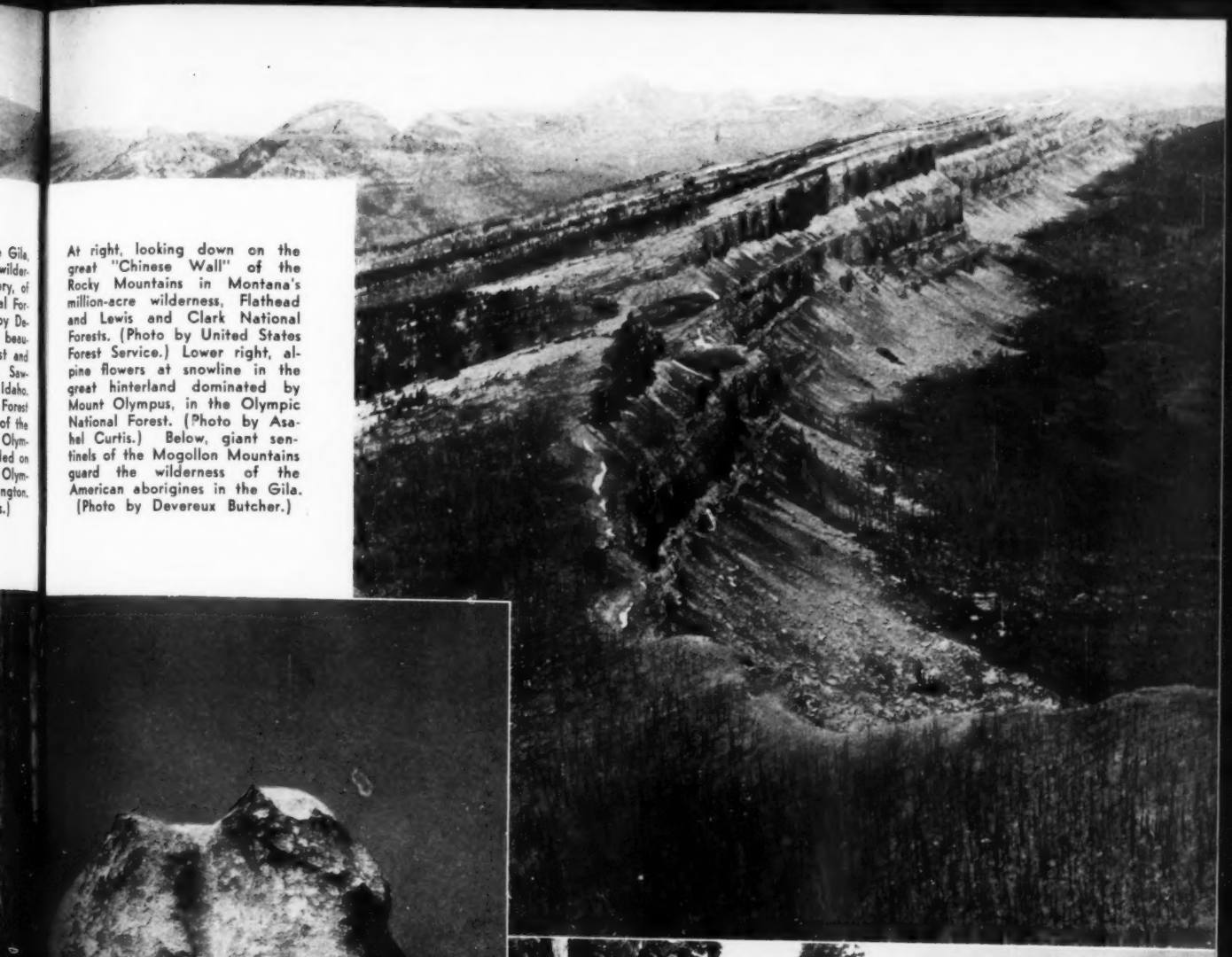
(*Continuing on page* 516)

Beautiful Holland Lake in Montana's Flathead and Sun River Wilderness. Below, the top of Wyoming's mighty Wind River Range in the Wyoming National Forest. (Photo by G. E. Barrett.)

On pages 482 and 483—the jumbled sea of peaks and valleys forming the Olympic Wilderness in Washington. (Photo by Ashahel Curtis.)



At left, in the heart of the Gila, the Southwest's greatest wilderness—the country of mystery, of Pueblo myths—Gila National Forest New Mexico. (Photo by Devereux Butcher.) Lower left, beautiful Pettit Lake in the vast and rugged wilderness of the Sawtooth National Forest, Idaho. (Photo by United States Forest Service.) Below, a glimpse of the mighty virgin forest of the Olympics, the wildwood surrounded on three sides by salt water, Olympic National Forest, Washington. (Photo by B. B. Jones.)



At right, looking down on the great "Chinese Wall" of the Rocky Mountains in Montana's million-acre wilderness, Flathead and Lewis and Clark National Forests. (Photo by United States Forest Service.) Lower right, alpine flowers at snowline in the great hinterland dominated by Mount Olympus, in the Olympic National Forest. (Photo by Asahel Curtis.) Below, giant sentinels of the Mogollon Mountains guard the wilderness of the American aborigines in the Gila. (Photo by Devereux Butcher.)

CANOEING ON THE HURON RIVER

The placid waters of the Huron above Ore Lake, with marshy pastureland on the one hand and close-growing trees on the other, offer an ideal stretch for canoeing

PLANNING VALLEYS OF LITTLE RIVERS

By HENRY S. CURTIS

THE Huron River in southeastern Michigan is a typical little river. On the average, it is not more than a hundred feet wide. Seldom does it exceed two feet in depth. It is of no significance to commerce. Its greatest value lies in the many ways it contributes to the social and recreational life throughout its valley.

In America there are many such little rivers and little river valleys which, through right planning, can be made to play an even greater part in our social life. And back of these are the thousands of smaller streams, from six to ten feet wide and around a foot deep, that, unheralded and unsung, have been the center of rural recreational life for many years—and will continue to be.

A close study of the Huron River clearly indicates that certain forms of improvement and development are necessary today, however, if these little streams and their valleys are to serve the social and recreational needs of the people to the limit of their capacity.

First is the matter of pollution. Even in rural districts the streams are carrying silt from eroding hillsides, the sewage of towns and cities, and the wastes of industry. Any and all of these tend to drive away the better forms of fish and prevent all public use of a stream.

There are two fundamental answers in each case; one of which is to save the materials that are now being wasted so that a stream coming from a pulp mill or sugar mill, for instance, will still be clear and usable water. A number of states and industries have recently appointed commissions to study this problem, and considerable progress is being made. It is likely that a nearly complete utilization is possible in most cases, but at present the expense would often be prohibitive.

Where it is impossible to utilize the wastes directly, the other method is to run them into some settling and coagulating vat where they may be treated and solidified for any use that may be found for them. Thus Milwaukee turns its sewage into fertilizer.

The common law says that the riparian owner on any stream has a right to have the stream come to him undiminished in quantity and unpolluted in quality. If cities were required to throw their sewage into a stream above the city, so that they would suffer the consequences, we should have no problem, but under present conditions it is their neighbors below that have to suffer. On a small stream the sewage of even a small city will prevent nearly all public use and depreciate the value of property for miles below. As such it is a violation of fundamental human rights.

In our legislation on rivers we have taken it for granted that the great objectives are commercial navigation and power. The country has forgotten its small streams. But for every navigable river there are dozens if not hundreds of small streams that are large enough to float a canoe. They are pretty evenly distributed over the United States. Properly cared for they would easily double the recreational facilities of the country. There is probably such a stream within less than twenty miles of more than nine-tenths of our population.

There is quite as much reason for the states to look after state rivers as there is for the Federal Government to look after federal rivers. Yet most of these rivers are almost completely neglected. On a recent canoe trip of about 140 miles, for example, we found the Huron, flowing through a metropolitan area of more than two million population, with ten barb-wire fences across it, a number of log obstructions, eight dams, long abandoned and collecting the drift of the stream, seven or eight low country bridges, requiring a portage, many rocks in the bed which make boating difficult and dangerous, and probably a hundred trees that had fallen into it.

It is no one's business to see that the Huron is kept in condition to use. Consequently nothing is done. The river has a solid bottom nearly all the way and for the most part it is less than two feet deep. The upper river is narrow and deep enough for any ordinary boating, but the lower river is often so wide that there is not water enough to go around. If there were a state department in charge of our streams, a tractor with wide and high wheels could probably move down the channel with a road scraper, and make a narrow low water channel that would be navigable at all times. It would be easy for such a tractor also to take out the fallen trees, logs, and rocks.

A fundamental problem of every river valley or drainage basin is a desirable and stable water level. This is especially true in Michigan where there are many marshes, lakes and rivers. It is quite evident in almost any county in the State that there are ditches that never should have been dug and marshes that never should have been drained. They yield only a little pasture in the dry seasons—not enough to pay for the original cost of the ditch—and the wildlife displaced is more valuable than any pasturage secured.

There are a number of cases in the Huron Valley where a drain put (*Continuing on page* 514)

Lancing shafts of gold, where the sun sifts down through virgin black walnuts in this Indiana State Park which is a fitting monument to the memory of John Lusk, the man who saved the trees of Turkey Run

THE TREES OF TURKEY RUN

By GEORGE A. SIMMONS

Photographs by Indiana Department of Conservation

IT WAS late afternoon and the trail we followed through the virgin woods of Turkey Run was flecked with the golden shafts of the sun.

"Thank God there was a man who loved these trees enough to fight for them," said my companion, an elderly man who knew and loved this most beautiful of Indiana's remnants of virgin forest.

I agreed. Here, indeed, were trees worth fighting for—magnificent hardwoods for the most part, with hemlocks on the higher bluffs and a few yew trees along the cliffs. I knew the man he referred to was John Lusk—I had heard of him—and that the trees of Turkey Run were now incorporated in a State Park.

We stopped under a great tulip tree which brought a smile to the old man's face.

"Not such a rare tree," he said softly, "but the most beautiful in the park. While Freeman was making his historic survey, nearly one hundred and thirty-five years ago, he recorded seeing these trees two hundred feet in height and ten feet in diameter. But such trees are not found today. This, the largest tulip tree in Turkey Run, is a little over fourteen feet in circumference. Indiana has honored the tulip tree by choosing its bloom as her state flower.

In the grove of ancient sycamores

"There is also a wild cherry in Turkey Run that is unusually beautiful—considered the largest in the state. The trunk rises to a height of ninety feet and it is as stately and as straight as the hemlocks on the bluffs."

We walked along in silence for awhile until we

came to a bend in the trail. There the old gentleman stopped me.

"Look up," he said. "This is the 'big sycamore,' the largest tree in the park."

I felt a little awed at the size of this giant. Up, up it towered until its white splashed arms seemed to caress the clouds. This veteran of the forest has a girth of twenty and one-half feet. It leans a little toward the waters of Sugar Creek as though tired of bearing its burden of untold years.

Slow decay near its mighty base is gnawing at its vitals and in time a storm or a whim of nature will lay the great trunk down to return to the soil from whence it came. Grouped about it are lesser brethren, themselves old and huge and towering, but the "big sycamore" was old when they sprang from the seed.

"I have often wondered," my companion said after a while, "how many canoes have passed upon the waters of Sugar Creek?—how many moccasined feet have padded over this trail at its base?—how many generations have lived and loved and died since it pushed its first shoot through the forest mould?"

And standing there I, too, wondered.

We hiked on to view a black walnut, a true and rare monarch, and the white oaks, the elms and the hackberries, all stately giants, gnarled and twisted by the storms and the winds of years. On the flats and ridges above the bottomlands we hiked under great spreading beeches.

Finally we sat down on an old sycamore log where we could gaze on the waters of Sugar Creek. It was then the old man told me the story of the trees of Turkey Run. I listened, spellbound, while a few vagabond clouds drifted out of the west.

"Many Hoosiers remember the heroic fight waged by a few people of vision and courage to save these trees," he began. "Yet before they made that fight one man stood and fought alone. That man was lonely John Lusk."

And so it was that I heard the story of Turkey Run—which is also the story of the Lusks. The names are inseparable. Many legends and stories have been woven around the Lusks. These have been sifted carefully and the following seems to be the most authentic:

One hundred and twenty-five years ago, General William Henry Harrison was making an offensive against the Indians. He sent a body of scouts up the Wabash River from Fort Harrison, near the present site of Terre Haute, to discover a route by which his army could reach Prophet's Town, where Lafayette now stands. This body of scouts, under command of Captain Salmon Lusk, of Vermont, journeyed up the east bank of the river. When they reached Sugar Creek, they traveled up the stream to cross it at a point now known as the "Narrows."

The stately trees and the rugged hills appealed to the Vermont pioneer and more than a decade later he brought a young bride to Turkey Run. On a hill overlooking the waters of Sugar Creek they built a log cabin. Here John Lusk was born, one of a family of seven children.

John grew to manood and old age on the old homestead and became the half legendary and wholly fascinating character who saved the trees of Turkey Run.

Little is known of his boyhood, but it has been said that he was unlike other boys of his age. He loved animals and trees far more than he loved men and the forest and hills were his playgrounds.

In 1869 tragedy came to the big brick house which had replaced the log cabin on the hill. Captain Salmon Lusk died, leaving his homestead and many acres of land. Here John Lusk remained with his mother, Polly Beard Lusk, whom he loved dearly.

For eleven years John was happy with his mother in their home on the hill. But with her death in 1880 he became a recluse from the world. Soon an aura of mystery and strange tales grew up around him and these tales became more strange with each telling.

Thirty-five years passed for John Lusk—thirty-five years of loneliness.

Just how lonely he was will never be known. He cared very little for men and not at all for women. He feared all strangers and distrusted them. He rarely spoke to those he did not know, but to those he knew he was kind.

As the years passed and the aura of mystery deepened around lonely John Lusk, many people, attracted by the strange tales, sought to gain admittance to the old brick house on the hill. Only a few were ever allowed to enter and most of these were children. The strange tales grew.

"He's a fool!" said the young upstarts of the neighborhood. "He's crazy!"

"Just queer," said some of the older folk.

"Lonely," said those who really knew him.

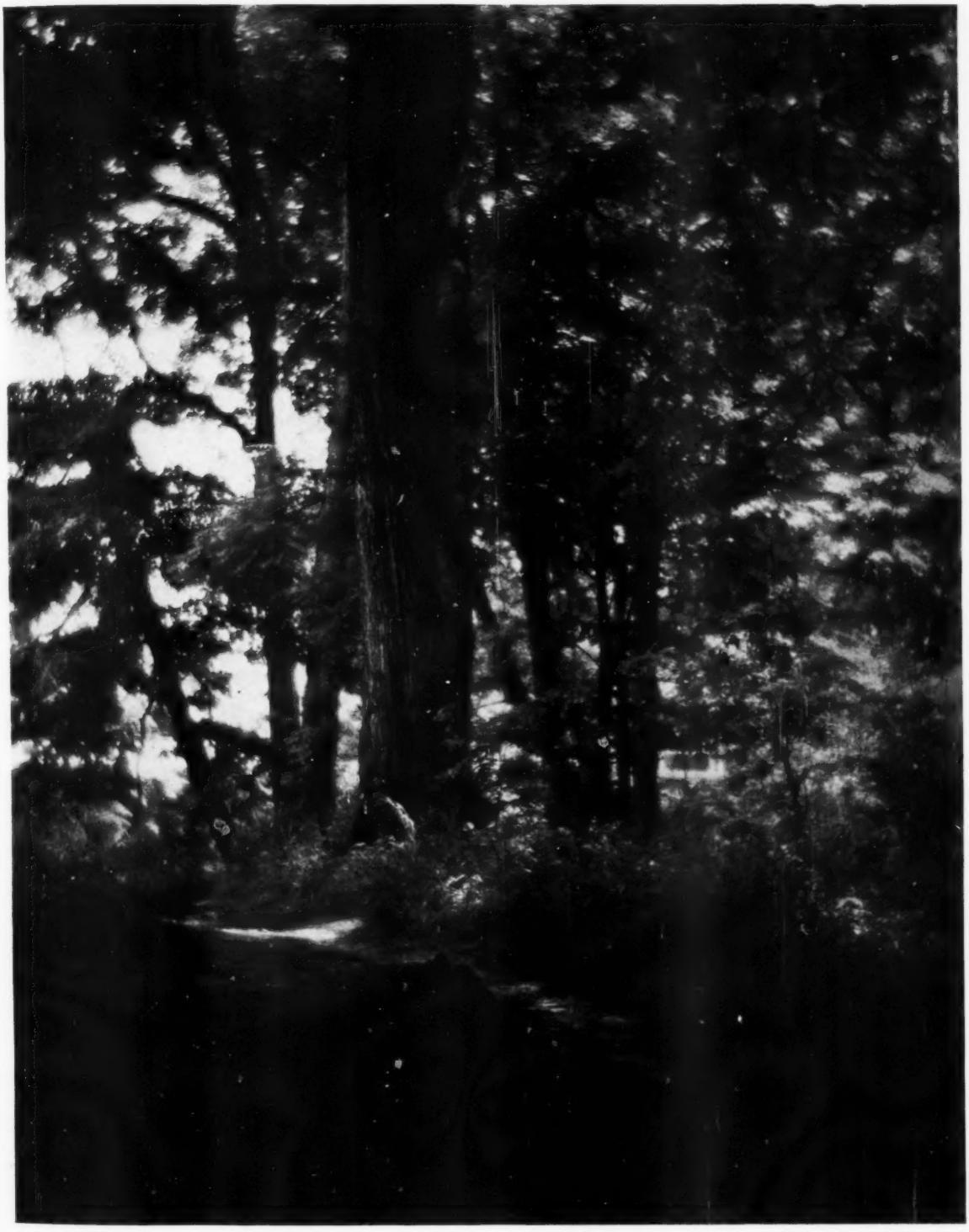
There were only two things that meant very much to John Lusk. His mother and his trees. When she died, the trees remained the one absorbing interest in his life.

Up to his death he stubbornly and vigorously refused to accept the huge sums which were frequently offered him for his land and its timber. No amount could tempt him to part with his heritage of trees. It is to his fortitude in resisting these offers that we today owe the beauty of Turkey Run with its hills and vales, virgin forest and winding trails.

The people of Indiana and of all the world may come and behold the huge giants of this virgin timber. These trees stand today because John Lusk fought so bitterly to save them. When his lonely life came to a close in 1915, the Nature Study Club of Indiana affixed a tablet near the old homestead bearing the legend: "To the Memory of John Lusk, Who Saved the Trees of Turkey Run."

When the old gentleman had completed his story we arose to plod thoughtfully on along the old trail by the stream. At one end of the old covered bridge over the "Narrows" we stopped in the twilight to look downstream upon the glories of a dreamy afterglow. And we waited.

Finally the silver disc of a moon came up to



Fragile tracery of foliage against the elms at Turkey Run

ride in the eastern sky. We walked slowly back over the winding trail. A faint mist veiled the waters of Sugar Creek. A night bird swept low. The trees seemed transfigured with a holy light.

There was witchery in the murmurs of the night. Mystic voices were in the woodlands. I wondered if they were the whisperings of the spirit of John Lusk wandering in the shadowy vistas of his beloved trees.

And what could be a more fitting monument than these trees as they stand today? What could be a greater tribute to the memory of John Lusk?

THREE MILLION FARMERS OPPOSE FORESTRY TRANSFER

Head of National Grange Tells Congress Rural People Are Against Reorganization Plan to Separate Forestry and Agriculture

APPEARING before the Senate Select Committee on Government Organization on August 5, Louis J. Taber, Master of the National Grange, emphatically recorded the opposition of the farmers of the country to Secretary Ickes' proposal to have his department renamed "Department of Conservation" and to have transferred to it the forestry and other conservation activities of the Department of Agriculture. This proposal is now written in Senator Byrnes' Reorganization Bill which has been favorably reported to the Senate and is expected to be among the first order of business when Congress reconvenes in January.

Representatives of more than 3,000,000 rural people representing every section of the nation and every type of agriculture are unanimous in their opposition to any reorganization that contemplates transfer of the Forest Service, the Biological Survey and the Soil Conservation Service from the Department of Agriculture, Mr. Taber told the committee. This opposition, he declared, is clearly apparent from the joint resolution passed by all important farm organizations at the last farm conference.

Speaking for the National Grange with 8,000 local units and 800,000 members, Mr. Taber said:

"The reasons for the position of the National Grange go back to the very beginnings of the Bureau of Forestry and the development of a conservation program in this country. Again and again the National Grange has gone on record in opposition to any transfer of the Forestry Bureau from the Department of Agriculture to the Department of the Interior or any other branch of the Government. We have gone on record again and again for the transfer of soil conservation and similar activities to the Department of Agriculture.

"For more than a quarter of a century the Grange has reaffirmed our sincere belief that all land-use problems of whatever kind and character must center in the Department of Agriculture if duplication, overlapping, and waste is to be prevented. Since the beginning of the farm depression in 1921 it has been apparent that there could be no sound program, no permanent farm relief, no long-time agricultural program if there was to be any division or duplication in executive departments dealing with land, forestry, conservation, crop production, plant control, soil conservation, and utilization. There can be no integrated and continuing program unless this policy is adhered to.

"Recently the National Grange has gone on record against changing the name of the Department of the Interior to the Department of Conservation, because of the inevitable threat to a sound agricultural program, and in this belief the National Grange does not stand alone. I am glad to say that at the last farm conference the following resolution was unanimously adopted:

" 'Whereas, There is pending in Congress a bill, *** to change the name of the Department of the Interior to the Department of Conservation and Works, and

'Whereas, It is the manifest purpose under this bill to transfer from the Department of Agriculture to the Department of the Interior the Forest Service, the Soil Conservation Service, the Biological Survey, and any other agencies of the Government dealing with conservation,

'Therefore be it Resolved, That the National Agricultural Conference by unanimous action opposes this measure as contrary to sound administration, the welfare of agriculture and the public good.

'It is in the national interest that the abovenamed agencies be retained in the Department of Agriculture.

'In order to bring about a more effective coordination in the administration of all legislation affecting agriculture, we recommend that the administration of such laws be uniformly lodged in the United States Department of Agriculture.'

(This resolution was subscribed to and signed by the Presidents of the following national farm organizations: National Grange, American Farm Bureau Federation, National Cooperative Council, Farmers National Grain Corporation, American Agricultural Editors Association.)

"From the list of organizations, it is apparent that the representatives of more than three million rural people, representing every section of the nation and every type of agriculture, were unanimous in their conclusions.

"As further justification for our position, we call attention to the language of the Brownlow Report in outlining the functions for a Department of Conservation and the Department of Agriculture. This report clearly indicates an intention of dividing functions between the two departments in a manner unsatisfactory to agriculture, dangerous to national welfare and adding to the expense and cost of government.

"Our opposition to this change is more fundamental, however, than the mere interference with a sound agricultural program. It is time that we have the courage to (*Continuing on page* 516)

EDITORIAL

REORGANIZATION—THE TRANSCENDING ISSUE

"THE problem of American forestry transcending all others at the moment is the grave threat to the integrity and effectiveness of the National Forests through the proposals for government reorganization now in Congress."

This statement made last month by Henry S. Graves, head of the Yale Forest School, a former Chief Forester of the United States, upon his return from an extended trip through the National Forests of the West, should bring home to the American people the real seriousness of impending action by Congress in dealing with federal conservation work in the name of reorganization. A foremost authority on forestry and conservation in this country and abundantly equipped with experience in federal forestry work, Mr. Graves knows whereof he speaks. Furthermore, his trip through the West this summer was taken with Gifford Pinchot, the first Chief Forester of the United States and under whom the National Forests were first organized and made safe as great public natural resources.

"The purpose of our trip through the western states," said Mr. Graves, "was to learn by personal observation the progress that has been made by the National Forests during the past twenty to thirty years in protection, management and administration of the forests for the public. We covered by motor more than four thousand miles. We did not obtain our information through opinions of Forest Service officers but from study and observation of local problems and from talks with citizens in the different regions.

"The National Forests are handled by the Department of Agriculture in an extraordinarily effective manner. The great achievements in protection and management represent the work over many years of an organization of technically trained men, wholly under civil service protection, and imbued with a spirit of public service that cannot be excelled anywhere in governmental service. The great progress from the beginning has been possible because of the fact that the Service is an integral part of the United States Department of Agriculture, whose function includes all phases of work pertaining to the productive use of the soil.

"The proposal to separate the Service from this Department would be a blunder that would be followed by far-reaching consequences in National Forest administration and to forestry generally in the United States. The decentralized system of management has resulted in a very close integration of the public forest enterprise with the life and welfare of the local communities. A change in the administrative organization, such as is proposed, would be destructive to the Service itself and to the local public relations. The proposed change in the civil service tradition, the inevitable shifts in policy, separation of the organization from the branches of the government dealing with soils, plant growth, animal husbandry, problems of insects and diseases, farm woodlands and agricultural economics, would be very serious in such a highly technical problem as National Forest administration.

"We encountered a very strong and widespread opposition to the reorganization plan throughout our trip. I returned from the trip with a deep conviction of the danger to American forestry from the reorganization proposals and the necessity for all persons interested in this great movement to enter a protest against the proposed change."

This appraisal of the situation coming from a man of Mr. Graves' experience and standing in forestry should leave no doubt as to the unsound and dangerous character of the reorganization proposals. Between now and when Congress meets again in January to take up reorganization, there must be no stacking of arms in the fight to save thirty years of conservation progress from dissipation and political jugglery. The issue has reached the point where it should be the individual responsibility of every citizen who believes in maintaining the integrity of his government's conservation work to let his Congressmen know how he stands.

WILDLIFE AND CYCLES

By LEONARD WING

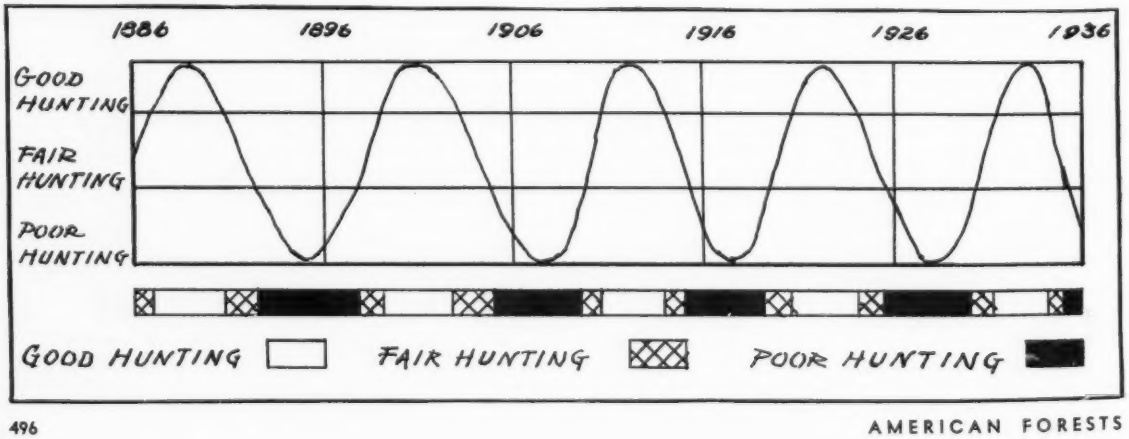
The upswing of the cycle can put more birds in half a township of this land than the state game farm can rear and release in the whole state

SOME time ago, I had occasion to discuss game with a very shrewd and salty veteran of wildlife conservation. Well versed in results of research, he philosophically recounted how for ages men have pondered over periods of abundance and scarcity of game. "When game was plentiful," he said, "the benighted savage bowed down in pious supplication and tendered offerings to the Gods and Spirits. But civilization has made man somewhat egocentric, so that he credits game increase to himself because of his predator-control, or his restrictive seasons and bags. The savage blamed scarcity of game upon the evil spirits. It really meant something to him, for he and his wife and children went hungry. Thus game-scarcity entered his religion; and he made offerings and sacrifices for the appeasement of the spirits.

"Sportsmen," continued the veteran, "blame the predators, that is, the hawks, owls, coyotes and others. Or they blame the game hog, or even the sentimentalists. And like the savages, they too make offerings and sacrifice a few days of open season for the appeasement of the ecological hob-goblins."

This somewhat facetious comparison carries more profound truth than a thousand

Chart showing relation of hunting to the stages of the ruffed grouse cycle in the northern part of the range



pious orations and resolutions! It is only too pathetically illustrative of our languid attitude toward the really understandable principles of wildlife conservation. There is no reason why the full interactions of wildlife should not be worked out by science in the same way that the interactions of my typewriter have been worked out—in a manner simple and easy to understand. There should be nothing occult about wildlife . . . in the face of real scientific research.

Recently it has been discovered that periods of scarcity and plenty in some species of game animals alternate with each other, one to follow the other as surely as sunrise comes after darkness. The term "cycle" has been applied to these recurring periods. "Cycle" has appeared with increasing frequency in literature and has caused some confusion. This is only natural with things new, especially if they connect with a popular or scientific mystery.

A quarter of a century ago, Ernest Thompson Seton gathered evidence of cycles, calling them "the ebb and flow" of animal life. Others had occasionally made allusion to such a

Fifty snowshoe rabbits were seen here in Wisconsin in a four-mile walk when the cycle swing was up in 1932—only three in eight miles a few years later when the cycle swung low

Above—In 1931 a census showed five hundred ruffed grouse per square mile—in 1935, none

Below—It is at the high of the cycle that damage to trees by chewing of snowshoe rabbits is greatest

phenomenon but Mr. Seton first breathed power and life into the concept. Cycle thought slumbered for many years longer until given a vitalizing impetus from Aldo Leopold in America and Charles Elton in England.

Studies of wildlife cycles have thrown much new light upon our problems. When geographic thinking begins to bear upon the cycles, we learn of their distant reach and reverberations. We learn that game populations in widely separated areas may fluctuate synchronously, that they may show different cycles in one part of the range from those in another, or they may be cyclic in one part and essentially stable elsewhere.

The time intervals between similar manifestations of a cycle are not strictly definite. They have an average length, although the actual length may shift about this average. For example, the eleven and a half year cycle averages that length. The past two intervals (*Continuing on page* 512)

WOODEN MATTRESSES FOR OLD MAN RIVER

By E. M. DAVIS

Above—Lowering the mattress from a barge into Old Man River's bed

Below—The bank is smoothed to a gradual slope and then paved with stone

OLD MAN RIVER is full of tricks. He plays them all along his sluggish yellow course from Lake Itasca to the Gulf, but in the South, augmented by the waters of the Missouri and the Ohio, he is most troublesome.

From Cairo to the Gulf his flood plain averages forty miles in width. It comprises 30,000 square miles of rich bottomlands, sheltered for the most part behind levees. Now and then, of course, Old Man River gets out of bounds, breaks through the levees and into the headlines. Nationwide attention is then directed toward him until he returns to his bed. But how many know that each year his bed is made more comfortable by wooden mattresses, the manufacture of which gives year-long employment to hundreds of timberland, sawmill, and river workers and consumes millions of feet of lumber?

One of Old Man River's favorite tricks along his 2,500 winding miles is the gnawing away of a bank here and building up a sandbar there. A large scale map of his course from Memphis to New Orleans presents a bewildering maze of loops, cut-offs, islands, bends and oxbow lakes. The river steamers today paddle over the spot where in Mark Twain's day the town of Napoleon, Arkansas, stood. The Father of Waters has literally wandered all over the map.

It is therefore not strange that Army engineers and others whose job it is to administer to Old Man River hit upon the idea of wooden mattresses to help keep him more quietly in bed. They consist in the main of one by four-inch boards woven basketwise into great sections from forty to 100 feet wide, and many times as long. When spiked and wired together, weighted, and sunk at critical points, the mattresses prevent cutting of the bank and changes of course.

The mattress is made at the river edge, the actual weaving being done on a barge which is moved downstream as the work progresses. The extreme edge, known as the "apron," is about four feet wide. Extending from the apron toward the water is a series of "cribs" or shallow pockets four feet square, made by building up the boards. On completion the mattress is sunk into place by dumping broken stone into the cribs. The cribs prevent the stone from shifting beneath the water.

The bank upon which the mattress is to be laid must be brought to a gradual slope. This slope cannot be more than one foot downward for every three feet horizontally, otherwise the mattress, despite its load of broken stone, might slip. After the mattress is sunk into place the bank is paved with stone down to about the waterline. This paving covers the apron of the mattress. Additional stone cast from barges is used to sink the outer parts of the mattress, and it is finally anchored to the shore with cables.

A Mississippi River bend often is bordered on one side by a steep high bank of dark alluvial soil, at the base of which the waters swirl by. Now and then a portion of this bank is undermined and topples into the current. A large mattress properly placed at such bends will go far to prevent undercutting.

The opposite or inner shore is usually low and shelving; the water being somewhat retarded there drops part of its load of sediment and gradually (*Continuing on page* 515)

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WYOMING FIRE TRAGEDY

Fire in Shoshone National Forest Claims Fifteen Lives

In one of the most tragic forest fire disasters in recent years, fifteen men were killed and more than thirty severely burned or injured when flames, on August 21, swept down a mountainside in the Shoshone National Forest, in Wyoming. Three Forest Service officers, one technical assistant, ten CCC enrollees, and an employee of the Bureau of Public Roads lost their lives.

The disaster was attributed to sudden and erratic wind action which swept the flames downhill through tree tops, overtaking a crew of fire fighters engaged in constructing a fire-line.

Among the victims of the tragedy was Forest Ranger Alfred G. Clayton, well known to readers of AMERICAN FORESTS for his human and interesting stories and pen sketches of ranger life. His most recent story was "The Chimes of Lost Valley" which appeared in the January, 1935, issue. According to survivors, Ranger Clayton was at one time out of danger but went back into the inferno to aid some of his men.

James T. Saban, a technical foreman attached to the Bighorn National Forest, along with Rex A. Hale, assistant technician of the Forest Service, were also in the clear but were said to have gone back into the fire in an effort to save the lives of others. Neither returned. The fourth forest officer to lose his life was Paul E. Tyrrell, junior forester of Oakland, California. The member of the Bureau of Public Roads to burn to death was Billy Lea, of Sherwood, Oregon.

From the ranks of the Civilian Conservation Corps ten lives were lost in the tragedy. They were John B. Gerdes, Hallettsville; George Rodgers, George West; Clyde Allen, McDade; William Whitlock, Austin; Will C. Griffith, Bastrop; Roy Bevins, Smithville; Rubin Sherry, Smithville; Ernest Seelke, Le Grange; and Ambrogio Garcia, Corpus Christi, all of Texas, and Mack T. Mayabb, Smithville, Oklahoma.

At the time of going to press, it was stated that the thirty-odd injured or badly burned fire fighters would survive.

The fire was first reported at the head of Sunlight Creek, fifty miles northwest of Cody, on the afternoon of August 20. Crews were immediately dispatched from a work camp in Sunlight Basin while Assistant Supervisor Carl G. Krueger made a survey of the fire area by plane. It was on this reconnaissance that the Blackwater fire, where the tragedy occurred, was discovered.

By the morning of August 21, the fire had burned about 500 acres and was believed under control. More than 300 men were on the fire line. Early in the afternoon, however, a strong wind came up and a call was sent out for additional men. About 200 additional CCC enrollees, along with several forest officers, were dispatched.

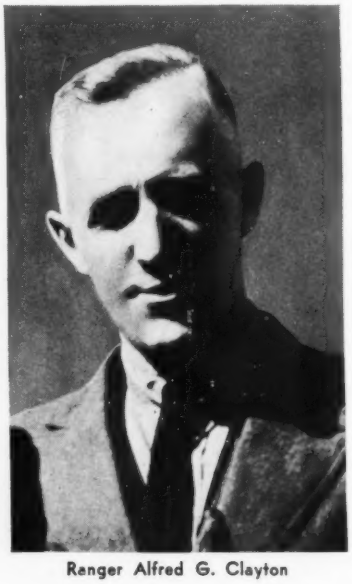
Accounts of what actually happened during those few brief moments later in the afternoon are sketchy. With several crews working on a steep hillside, constructing a fire line on the flank of the fire in an effort to pinch it in front, the wind changed suddenly and blew a heavy gale down the hill, trapping the men.

"The wind suddenly swept the flames up in the tree tops," said one of the survivors. "I never saw fire travel so fast. It encircled us faster than we could run."

From Forest Ranger Urban J. Post, however, who, with his crew of fifty or more CCC fire fighters, faced death on a rocky island high in the forest, comes the most authentic account of the tragedy—or at least a part of it. From an interview published in *Happy Days*, the weekly newspaper of the CCC, Ranger Post said:

"Almost like a shot out of a gun, there was a heavy wind. It swept through the area in as near as I can determine a northeasterly direction; this carried sparks over the constructed line and below us. I heard a fire roar to the northwest and it appeared to be a considerable distance away. I called to Tyrrell and told him that something was going wrong and that I was going to investigate.

"I ran for some distance to the northwest and climbed a rocky point and saw below me a spot fire of considerable size burning to the northeast of us. My impression was that this fire should be immediately taken care of.



Ranger Alfred G. Clayton

"I turned to summon help for this job when there was a decided change in the wind again and the spot fire was swept into the southwest directly into the line of men on line construction. In a few seconds numerous fires appeared below the line. Almost at once it was clearly evident that further attempts at line construction in that area was out of the question. I sent out a call for all men to abandon their work and proceed to the ridge to the northeast. This was approximately 3 P. M. . . . .

"We walked the ridge and called and tried to impress upon the boys the seriousness of the situation and their need for haste.

"All possible chance of escape was cut off to the north and west. We agreed that our only chance lay in the direction of timberline.

"When we reached the last park the fire had entered the short neck of timber between us and timberline and we were cut off. The men were nearly exhausted.

"We were able to gain a few minutes rest on this rock ridge before the timber to the south crowned. By climbing down the steep north slope of the ridge we were afforded fairly good protection from this fire with the exception of sparks dropping and setting fire to our clothes . . . .

"This blast produced spot fires in the canyon to the north of us. . . . Sullivan and Tyrrell and myself crawled to the top of the ridge and all agreed that that crown fire was possibly the thing that was going to save us, because if the wind held in its present direction that first burn would be cool enough for us to retreat into when the other would let go.

"As soon as we were convinced that the smoke from this fire was not dense enough to cause trouble with breathing, we moved the men from the north side of the ridge over the south side.

"We cautioned them and told them that regardless of what happened they were to stand hitched and lie flat on the ground. But a very few minutes elapsed between our move and the crowning of timber to the northwest, down to the ridge and in the canyon to the north. The park was swept by a sheet of flame and I have no way of estimating its duration . . .

". . . After the first blast of flame swept the park I do not believe there was over one more short interval that we endured flames. For a considerable period the smoke was so dense that it was very doubtful if some of the men would survive. We had convinced them that their only chance was to keep their noses to the ground.

"In perhaps an hour the smoke had lifted until we were quite safe from that source and in taking stock of our injuries and conditions generally it was noted that at least two men were missing. There was no way of knowing which way they had gone and it was folly to my mind to search for them in the blaze.

"Mr. Tyrrell was so badly burned that he was no longer of any help. He was told to lie still and stay on the ground. At sundown, I took Mr. Sullivan and one or two others who did not seem to be burned badly and we proceeded slowly down to the fire. . . .

"After getting into the burn a short distance we found that the ground was quite cool due to its not having any great amount of duff to burn. We could hear someone calling off in the direction of the fire line we had attempted to construct. We could not get any intelligent answer, so we concluded that someone must be in danger and that if he was in a condition to enable him to call that surely the smoke was not bad enough but that we could manage.

"I then sent Mr. Sullivan back with instructions to hold these men on the ridge, light the lanterns when dark came and answer any call that he might hear. We then proceeded in the direction of the call in the fire burn.

"We were very near the line when we found a boy lying on his back, badly burned, calling for help, and wanting water. We knew that we were within a short distance of the water that we had passed on the way in. Fortunately there was a water bag with us. So one of our men was left to get some water and to do what he could for this boy. I showed him the general direction that I intended to take through the burn and told him that I was going for help. . . .

"Shortly afterwards I met Assistant Supervisor Kreuger. I briefly outlined the condition of the men and what was needed to get them out. I was sure that Tyrrell and one or two others would have to be brought out on stretchers.

"After this I was instructed to continue on to Blackwater Creek, where an Army doctor was available to treat my burns . . ."

"Caterpillar" Diesel Tractors and Graders have built more than 400 miles of road through a 778,000-acre tract near Lufkin, Texas, for the U. S. Forest Service. The upper picture shows one of six "Caterpillar" Diesel Auto Patrols that keep the road in good shape. The lower picture shows a "Caterpillar" Diesel RD7 Tractor with a No. 66 power-controlled Grader marking out a new road in connection with the building of a dam in Sam Houston National Forest. More miles of roads can be built and maintained with "Caterpillar" Diesel equipment, and at lower cost, whether the trail lead through forest or rocky terrain. Send for the picture-book: "Road-Maintenance with 'Caterpillar' Machines."

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AROUND THE STATES

FARM SECURITY TAKES OVER RESETTLEMENT

The program of land utilization and retirement of submarginal land, previously handled by the Resettlement Administration, was transferred on September 1 to the Bureau of Agricultural Economics, under the direction of Dr. L. C. Gray, assistant chief in charge of land utilization. This was in accordance with instructions from Secretary Henry A. Wallace. At the same time, the newly created Farm Security Administration of the Department of Agriculture assumed the functions of the Resettlement Administration and those recently described in the Bankhead-Jones Farm Tenant Act. Will W. Alexander, formerly in charge of Resettlement, is now Administrator of the Farm Security Administration.

Under the new policy consistent efforts will be made that all lands acquired in the program of land utilization and retirement of submarginal land will be transferred to the agencies that are to be charged with their permanent administration, before any development and improvement work is done. Accordingly, with practically all the necessary development work performed by the agency that will administer the land, only a small development staff will be retained in the Bureau of Agricultural Economics. These and other parts of the program will be carried out under the general supervision of M. S. Eisenhower, newly named coordinator of Land Use Planning.

NEW FORESTS APPROVED

Purchase of about 370,000 acres of land in forty-four National Forest Purchase units was approved by the National Forest Reservation Commission on August 26. These approvals obligated $1,143,577 of the total $3,000,000 Congressional appropriation for National Forest land acquisition for the fiscal year.

The Commission also authorized a change of boundaries of the Jefferson National Forest in order to include and make available for acquisition 130,489 acres of wooded land in Virginia and eastern Kentucky.

Tentative approval was given for the purchase of a tract of heavily timbered land in the Ochoco National Forest, in Oregon. This purchase will make it possible for the Forest Service to work out a plan of sustained-yield management for a large area of timbered land, part of which will be privately owned and part in public ownership. The area to be added to the National Forest by future purchases will be approximately 52,000 acres.

By regions, the largest group of approvals was for lands in the Lake States, amounting to 108,745 acres. About 107,000 acres were approved in the Appalachian region and 94,399 acres in the Ozark and Central Mississippi region. For the southern pine area 42,937 acres were approved and for the Piedmont region 10,229 acres. Small purchases were approved for New England, Idaho, and Puerto Rico National Forests. Purchases of 4,264 acres approved in Idaho were on the watershed of the Arrow Rock Dam.

Large purchases were made in several individual National Forests. In the George Washington National Forest, chiefly in Virginia, 34,866 acres were approved. Other large purchases were in the Superior National Forest, in Minnesota, 24,195 acres; the Ozark, in Arkansas, 26,707 acres; the Ouachita, in Arkansas, 24,185 acres; Ocala, in Florida, 23,511 acres; and Chattahoochee, in Georgia, 31,002 acres. In Missouri units, purchases totalled 39,000 acres; in Minnesota, 40,000; in Michigan, 43,000; and in Wisconsin, 25,000.

The proposed purchase of a portion of the Ochoco Timber Company's holdings within and adjacent to the Ochoco National Forest near Prineville, Oregon, had been considered by the Commission for the last two years. F. A. Silcox, Chief of the Forest Service, had recommended the acquisition of the land in order to set up a private-and-public sustained yield timber management project on a practical working scale in the ponderosa pine region.

Lloyd G. Hornby

LLOYD HORNBY DIES ON FIRE LINE

Lloyd G. Hornby, who early in March was placed in charge of the special fire control planning project of the United States Forest Service, died suddenly on August 21 while fighting fire on the Clearwater National Forest, in Idaho. Death was due to heart failure.

Entering the Forest Service in 1916 after receiving his A.B. and M.S. degrees in forestry from the University of Michigan, Mr. Hornby quickly specialized in fire control, being made a fire assistant on the Flathead National Forest in 1919. His really serious fire control work began, however, in 1931, when he was assigned to the Northern Rocky Mountain Forest and Range Experiment Station to study methods of getting more efficient fire control at less cost. During the next three years he developed fire control planning. This work includes a detailed inventory of all constant factors of fire danger on every acre of forest land with roads, trails, telephone lines, lookout stations, smokechasers' stations so located that the maximum of protection can be given at a minimum cost.

In June, 1937, Mr. Hornby was transferred to the Washington office of fire control of the Forest Service to head the work of getting his methods into actual practice in all the National Forests which have fire problems. At the time of his death, he was making his headquarters at Missoula, Montana, office of the Forest Service.

TWENTY-TWO STATES FIGHT EROSION

Farmers in twenty-two states now have authority under state law to organize for local cooperative action in combating soil erosion and preventing wasteful land abuse.

During the last six months, legislation providing for the creation of local soil conservation districts has been written into the statute books of Arkansas, Colorado, Florida, Georgia, Indiana, Kansas, Illinois, Maryland, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, Utah, and Wisconsin.

Most of these state statutes are modeled in principle after the Standard State Soil Conservation Districts Law, prepared by the Department of Agriculture at the request of various agencies in a number of states. In general, they set up a procedure for the creation of soil conservation districts with authority, as governmental subdivisions of the state, to develop and carry out erosion control programs in cooperation with individual farmers, and to enforce land-use regulations which have been approved by a majority of the land occupiers in a district.

Legislation of this type was recommended by President Roosevelt in a letter to the governors of the several states last February. At that time, the President declared that while the erosion control demonstrations carried on by the Department of Agriculture during the last several years have "pointed the way," state legislation to supplement federal activities "is imperative to enable farmers to take the necessary cooperative action."

NEW PRIMITIVE AREA

The Three Sisters, remnants of the once largest mountain in Oregon, now in the Willamette National Forest, have been designated a primitive area.

The area so designated extends for nearly forty-five miles along the backbone of the Oregon Cascades and includes some of the most rugged country in Oregon. In no other place in the country, it is said, can be found such a variety of extinct volcanoes, glaciers, lava flows, lakes, streams, ridges and flora in such a small area.

North Sister, apparently the oldest mountain of the three, is regarded as one of the most difficult mountains in Oregon to climb.

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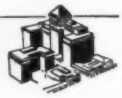

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BROOKINGS REPORT STRADDLES CONSERVATION ISSUE

Institution's Study of Federal Conservation Activities Leads to No Definite Recommendation for Grouping Bureaus

After an exhaustive study of the conservation activities of the Federal Government, the Brookings Institution of Washington, engaged by the Select Committee of the Senate, of which Senator Harry Byrd is Chairman, to investigate the executive agencies of the government and make recommendations in respect to federal reorganization, released last month its report on activities relating to the public domain, agriculture and wildlife and aquatic resources. The report is No. 11 of the series prepared by the Institution.

Its appearance had been awaited for many months as a document that might chart a clear-cut course of reorganization of the government's conservation bureaus and activities. The report, however, takes an equivocal position and straddles the main issue of the department in which conservation activities might best be grouped from the standpoint of economy, efficiency and inter-bureau cooperation. It says in effect that it makes little difference whether the major activities of the government relating to the public lands and natural resources are grouped in the Department of Agriculture or the Department of the Interior.

Among the report's specific recommendations, however, are the following bearing directly upon conservation activities: that grazing on the public lands and in National Forests should be brought under common direction; that administration of the revested Oregon and California railroad grant lands and of the smaller national monuments located within National Forests should be transferred to the Forest Service; that it is impracticable to consolidate all wildlife conservation activities in one department but that the Bureau of Fisheries should be placed in the same department as the Bureau of Biological Survey; that the bird studies of the Bureau of Entomology and Plant Quarantine should be transferred to the Bureau of Biological Survey if the latter bureau remains in the Department of Agriculture; that there should be closer coordination in the development of recreational facilities in National Parks and National Forests; that coordinating activities in the field of water utilization now performed by the National Resources Committee should be placed on a more permanent basis; that parks in the District of Columbia should be transferred to the District of Columbia government; that grazing lands acquired by the Resettlement Administration should be transferred to the Forest Service or the Division of Grazing respectively, and that the food investigation work by the Bureau of Fisheries should be transferred to the Bureau of Home Economics.

The land agencies of the government which the Institution found overlapping in their work are given as the General Land Office, Geological Survey, Division of Grazing, Bureau of Reclamation and the National Park Service, all in the Interior Department; and the Forest Service and Bureau of Biological Survey in the Department of Agriculture. In discussing the grouping of these agencies in one department or the other, the report concludes:

"The first method is to unite them in the Interior Department, leaving scientific and technical investigation, except in the case of the Forest Service and the Biological Survey, to the Department of Agriculture. In the case of these two agencies, overlapping on one side or the other is unavoidable. As far as the others are concerned, there is likely to be much less friction between the two departments if they are so organized that they supplement each other's activities instead of competing against each other as at present. Once the general lines of land policy have been determined, interdepartmental cooperation on matters of detail should be relatively easy to arrange.

"The case for concentrating the public-land agencies in the Interior Department is that such an arrangement would make for unified management of the Public Domain. It is maintained that the problems of public-land administration, which involve the adjudication of titles, the awarding and supervision of leases for the use of mineral and grazing resources, the conservation of water resources, the development of recreational facilities, and the preservation of places of scientific, scenic, and historical interest, are sufficiently distinct from research and promotional work in the general field of agriculture to require separate supervision.

"The question may be raised as to how important a factor land ownership, or the responsibility for administrative management, is in the application of policies of land utilization. Such policies, after all, are formulated by Congress; and if it is determined that they should apply to federal as well as non-federal lands, it may not make much difference which department of the government has physical control of the lands. Moreover, the work of the Department of Agriculture in scientific research, soil conservation and rural welfare can be and is applied to land under a wide variety of ownerships—federal, state, county, municipal and private. If it has been found feasible to work in cooperation with landowners other than the Federal Government, cooperation with another department of the government should not be impossible.

"To select a specific example, it is desirable that a close relationship should be maintained between the Division of Grazing and the Bureau of Animal Industry. However, the work of these agencies is supplemental rather than competing. One provides technical advice on grazing problems; the other administers grazing on the Public Domain. There is no necessary conflict and no compelling reason why, in this particular case, both bureaus should be in the same department.

"On the assumption that the public-land agencies should be brought together, the second possible method is to place them all in the Department of Agriculture. This suggestion is justified by the contention that the Public Domain is simply one of the factors in the general problem of national land utilization, and that land-utilization policies must be formulated on the basis of all land, regardless of whether it is federally owned or not. Policies of crop control, it is argued, cannot be made fully effective unless they include grazing on the Public Domain and in National Forests and lands under the control of the Bureau of Reclamation; and the public lands have an important bearing on the problems of soil conservation and watershed protection. It is also pointed out that the problems of public-land administra-

tion, especially in the fields of forestry and grazing, are intimately related to the present scientific activities of the Department of Agriculture.

"If this course of action should be adopted, however, the Secretary of Agriculture would become responsible for the adjudication of land titles, the awarding and supervision of leases, and other matters which have at best a remote relation to the purposes of the Department of Agriculture, as these purposes are defined at present. The incongruity becomes more apparent when it is considered that the major part of the present activities of the General Land Office is concerned with mineral lands. It seems obvious that the administration of mineral lands is not a suitable function for the Department of Agriculture as it is set up at present.

"A possible remedy for this situation would be to keep the General Land Office and the Geological Survey in the Interior Department and transfer the agencies concerned with the surface use of land to the Department of Agriculture. If this course were adopted, the question might be raised as to whether enough was left of the Interior Department to justify its maintenance as a separate organization. If this consideration is passed over, it may still be pointed out that the distinction between surface and subsurface uses of land is not entirely clear. In the arid and semiarid regions of the West, where the bulk of the Public Domain is located, the study of water resources, which is a geological function, has a vital bearing on the use of land for agricultural purposes."

As a third possibility the report suggests that a department of land use might be created "which would be practically a consolidation of the present Department of Agriculture and the Interior Department, a new organization with a broad basis and wide scope, concerned with the utilization of land for all purposes, surface and subsurface alike." Asserting that this proposal appears to offer a more satisfactory method of coordinating land activities than any plan of shifting bureaus between the Departments of Agriculture and Interior, the report raises the question of whether the establishment of a department along these lines is feasible. "It may be suggested," the report states, "that the considerations involved in its creation are outside the scope of the present study, which deals with organization rather than policy. The Public Domain is unquestionably one of the factors in the problem of national-land utilization, but land utilization has such diverse ramifications that it is not altogether certain that it either can or ought to be dealt with by a single department of the government."

CONSERVATION?

In a letter to Senator Harry F. Byrd, of Virginia, chairman of the Select Committee on Investigation of Executive Agencies of the Government, A. G. Houghton, of New York, a member of the New York State Reforestation Committee, and a director of The American Forestry Association, late in August declared that "to call the Department of the Interior a Department of Conservation would be not only a misnomer but also a tragedy."

Citing quotations from President Franklin D. Roosevelt and from Dr. Ray Lyman Wilbur, former Secretary of the Interior, to show that the Public Domain, under the jurisdiction of the Department of the Interior, has for many years been poorly administered from a conservation standpoint, Mr. Houghton asked: "Is not the history of the Department of the Interior mainly the history of destruction and waste?"

He further pointed to the National Park Service, in the Department of the Interior. "The long and well-established principle dominating the administration of the National Parks is the absence of commercialism within their borders. The parks are not only monuments of conservation but also natural resources museums."

Yet, he said, "A law has been enacted authorizing the Reclamation Service, also under the jurisdiction of the Department of the Interior, to construct the so-called Colorado-Big Thompson Project, a project to bring waters from the west side of the Rocky Mountains to the east side by means of a tunnel under the mountains and across and under the surface of the Rocky Mountain National Park. The justification of this project is sought in the report of Porter J. Preston, senior engineer. He states:

"'Every effort has been made in the survey and design of this project to not disturb the natural beauties of the Rocky Mountain National Park and its surrounding areas (How successful such efforts will be is not stated). The bill authorizing the creation of the Rocky Mountain National Park reserved the right for the Bureau of Reclamation to survey and construct an irrigation project within the boundaries of the Park.'

"Could anything be more cynically stated?—The Department of the Interior setting up standards for one of its services to be disregarded by another of its services.

"Can a Department permitting one of its bureaus to break down and destroy what another of its bureaus has built up be called a Department of Conservation?"

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CONSERVATION AND THE 75TH CONGRESS

Final Days of Session Reflect Danger of Dismemberment of Forestry Through Federal Reorganization

By G. H. COLLINGWOOD

The last weeks of its first session saw the 75th Congress defer action on government reorganization, pass the O and C Sustained Yield Forest Act, appropriate $2,005,000 to add the Carl Inn tract of sugar pine to the Yosemite National Park in California, and lay foundations for a national program of wildlife restoration by enacting the Pittman-Robertson bill providing federal aid to wildlife.

No conclusion was reached on any of the bills relating to the reorganization of the Federal Government, but actions during the last two weeks of Congress show clearly the trend of New Deal members to support the Administration's plan to change the name of the Department of the Interior to "Conservation." With this is the implication that the Department of Agriculture will be relieved of such conservation activities as are included in the Forest Service, Biological Survey, and Soil Conservation Service, unless the public registers much more vigorous opposition than has heretofore been expressed.

After public hearings lasting ten days, during which farm and conservation organizations uniformly opposed changing the name of the Interior Department to "Conservation," Senator James F. Byrnes of South Carolina, Chairman of the Senate Select Committee on Government Organization, reported favorably a bill, S. 2970, which would effect the change of name. The bill was introduced by Senator Byrnes, Chairman of the Committee, to take the place of S. 2700, introduced by Senator Robinson before his death. This new bill, now on the Senate Calendar, differs little from the original Robinson bill, but limits to three years the power of the President to submit executive orders to Congress concerning "any transfer, retransfer, regrouping, coordination, consolidation, reorganization, segregation, or abolition of the whole or any part of any agency." Section 402, proposing to rename the Department of the Interior the "Department of Conservation" is continued without change. The bill does not exempt the Forest Service, Biological Survey, Soil Conservation Service, or any other activities of the Department of Agriculture from possible transfer or change, as it does in the case of "the functions exercised by the Engineer Corps of the Army or the Mississippi River Commission in administering any laws relating to rivers and harbors or flood control."

Title II relating to Civil Service and Classification continues the original proposal to abolish the offices of three Civil Service Commissioners and center authority under a single Civil Service Administrator. It would also empower the President, with the consent of the Senate, to fill by appointment such positions as the "head of any bureau, division, service, or other similar agency * * * if the President finds that such office or position is policy-determining in character." This may be less inclusive than the comparable clause in the Robinson bill in that it appears to limit these withdrawals from Civil Service Classification, with subsequent direct appointment, to the heads of bureaus, divisions, services, and other similar agencies. It leaves, however, final determination as to whether a given office is policy-determining in character, to the President.

In line with the House program to effect federal reorganization by four separate bills, that body passed Representative Lindsay C. Warren's H. R. 8202 on August 13. This bill would give the President three years during which he would have authority to regroup, abolish, transfer, and consolidate government bureaus. While proposing to create a Department of Welfare, no provision is made to change the name of the Department of the Interior to the Department of Conservation.

An amendment to list the Forest Service with other agencies exempt from transfer, introduced by Representative James W. Mott of Oregon, was defeated. During the debate, Representative Warren declared that the House bill as drafted would empower the President to transfer the Forest Service from the Department of Agriculture to the Department of the Interior, but that no power is given to change the name of any executive department.

An appropriation of $1,000,000 for putting into effect the provisions of the Norris-Doxey Farm Forestry Act of May 18, 1937, was eliminated during final action on the Third Deficiency Act, signed on August 25. Accordingly, the Norris-Doxey Act remains ineffective for lack of funds. The Deficiency Act includes $10,000,000 that the Secretary of Agriculture may carry out provisions of Title III of the Bankhead-Jones Farm Tenancy Act of July 22, 1937, relating to the development of a program of land conservation and land utilization, including the retirement of submarginal lands. Whether any of this money can be used for forest purchases remains to be determined. Administration of this section has been delegated to the Bureau of Agricultural Economics and the major portion will probably be used for purchases in the "dust bowl" area.

The Revested Oregon and California Railroad Land Grant bill, as signed by the President on August 28, authorizes the Secretary of the Interior to manage some two and a quarter million acres of timberlands in western Oregon for permanent forest production. He is also authorized to sub-divide the revested lands into sustained yield units to provide a permanent source of raw materials for the support of dependent communities and local industries, and to cooperate with federal, state, or private forest administrative agencies for the coordinated administration of their lands. Pending the completion of studies to determine the annual productive capacity of the revested lands, sales to the extent of an average annual cut of one-half billion board feet of timber may be made. To promote sustained yield management, however, the Secretary is given discretionary authority to refuse bids for timber. Title II of the Act provides means for satisfying tax claims of the Oregon counties in which the lands are located, leaving one-fourth of the receipts available for Congress to allot for administrative purposes.

Included in the Third Deficiency Appropriation Act of August 25 is authority to draw $2,005,000 from the unexpended balance of the appropriation contained in the Emergency Relief Appropriation Act of 1935 for the purchase of 6,700 acres from the Yosemite Sugar Pine Lumber Company, for addition to the western boundary of the Yosemite National Park, as authorized by the Act of July 9, 1937. The tract is reported to contain 308,000,000 board feet of standing timber, much of which is large sugar pine. An additional 500 acres within the Stanislaus National Forest is transferred by the same Act to the National Park.

The Deficiency Act also carries an allocation of $192,568 from the Emergency Relief Appropriation Act of 1937 for the purchase of land in connection with the original functions of the CCC. Some $57,350 of this is to meet interest charges toward settling the 27,320 acre Morton-Butler purchase in the Great Smoky Mountains National Park. Additional sums are included for two other tracts in North Carolina and Tennessee which have been in litigation, and $111,000 to complete purchase of lands for the Mammoth Cave National Park in Kentucky. No action was taken on Senator McCarran's bill, S. 2583, as amended by Senator McKellar to authorize $743,265 for the purchase of 26,015 acres in Tennessee for addition to the Smoky Mountain National Park and $325,000 for the purchase of 100,000 acres fronting on Lake Tahoe for addition to the Tahoe National Forest in Nevada. This bill passed the Senate and awaits action in the House.

Federal aid for a nation-wide program of wildlife restoration in the several states to the extent of some $2,760,000 a year, derived from excise taxes imposed on firearms and ammunition, is promised in the Pittman-Robertson Act of September 2. This is, however, only an authorization for future appropriations which are to be included in the Budget and passed by Congress. No appropriation can be made before the fiscal year beginning July 1, 1938, when such money as may be provided by Congress may be allotted to the states on the basis of three dollars from federal sources to one from state sources. No state may receive more than $150,000 or less than $15,000 a year. Each cooperating state must provide that the money will be used only for authorized wildlife restoration projects, and furthermore must assure that all license fees paid by hunters will be used only for projects designed for the restoration of wildlife. On the assumption that funds from state sources may amount to $920,000, the total sum authorized for wildlife restoration would be approximately $3,680,000.

While differences between the House and Senate versions of the Barkley-Vinson bill to create a Division of Water Pollution Control in the United States Public Health Service failed to be cleared up during the last days of the session, causing final action to lay over until the January session, an important but less comprehensive bill to control pollution in the Potomac River was signed by the

(*Continuing on page 509*)

NEW BOOKS

FOUNDATIONS OF SILVICULTURE UPON AN ECOLOGICAL BASIS (Second Edition), by the late James W. Toumey and Clarence F. Korstian. Published by John Wiley and Sons, Inc., 440 Fourth Avenue, New York City. 456 pages. Price $4.50.

Dr. Korstian has amplified and clarified the classic work of Professor Toumey, and through John Wiley and Sons brings to American foresters a new edition of "Foundations of Silviculture Upon An Ecological Basis." Like the original book, this edition shows the infinite pains with which the world's literature on forestry and ecology has been combed to show the relationship of the forest community to its basic biological laws. It is a stimulating and thought-provoking text book for mature students.—G. H. C.

OHIO TREES, by F. W. Dean. 104 pages, illustrated. Published by the Agricultural Extension Service, Ohio State University, Columbus, Ohio. Price 15c.

More than one hundred varieties of trees, together with a number of shrubs and small trees native to Ohio are described and illustrated in this paper-bound book suitable for field use. Supplementing this is a key to evergreen and deciduous trees prepared by Professor L. C. Chadwick of the Ohio State University. It is a useful book for identifying the trees of the Central States, with particular reference to Ohio.—G. H. C.

ANIMALS OF THE CANADIAN ROCKIES, by Dan McCowan. Published by Dodd, Mead and Company, New York City. 302 pages. Illustrated. Price $3.00.

The author, having spent many years in the northern mountains studying and photographing the wildlife found there, has presented a most interesting and worthwhile series of animal biographies under the title "Animals of the Canadian Rockies."

Gathered into this one volume is a wealth of material describing the beasts and lesser creatures which roam the sanctuaries provided by the Dominion Government. In the stillness of verdant valleys, on narrow ledges of precipitous cliffs, through impenetrable forests, and along swift running mountain streams, the animal life of the Canadian region is recorded and photographed, and the record is interspersed with graphic tales of genuine interest.

The index provided in the back of the book for ready reference, and the splendid photographic reproductions help make this book an outstanding contribution to the subject of animal study.—D. D.

ELEMENTS OF FORESTRY (Third Edition), by Franklin Moon and Nelson C. Brown. Published by John Wiley and Sons, Inc., 440 Fourth Avenue, New York City. 397 pages. Illustrated. Price $3.50.

An old favorite has been revised and brought up to date. This book was first published under the same title, "Elements of Forestry," in 1914. It continues as comprehensive and readable as were the first and second editions. Following the traditions already established, it should be one of the popular means of presenting forestry to elementary classes and for opening in the minds of laymen ideas concerning forestry and the lumber industry in America.—G. H. C.

RECENT WILEY BOOKS

Timber Products and Industries

The Harvesting, Conversion and Marketing of Materials Other Than Lumber, including the Principal Derivatives and Extractives

By NELSON C. BROWN, *Professor of Forest Utilization, New York State College of Forestry, Syracuse University*

This book gives an elementary and introductory description of the principal methods pursued in converting products from raw materials as found in standing timber to useful commodities. The book incorporates the results of recent research and study. The contents include discussions of the economic aspect of the problem (sources of waste, the increasing trend toward utilization of by-products, etc.), construction materials, chemically derived products, wood containers, mechanically reduced products, wood as fuel, etc.

Published September 1937 — **316 pages, 112 illustrations; 6 by 9; $3.50**

The Practice of Silviculture

With Particular Reference to Its Application in the United States of America

By R. C. HAWLEY, *Morris K. Jesup Professor of Silviculture, Yale University*

The fourth edition of this well-known book covers reproduction methods and intermediate cuttings. Those chapters which in former editions dealt with forest protection have been omitted, thus allowing space to bring the remainder up to date. Considerable material on clear cuttings with artificial regeneration has been added. An effort has been made to keep the book short enough so that it may be conveniently covered in the usual course in silviculture. The contents have been completely modernized.

FOURTH EDITION

Published July 1937 — **252 pages; 68 illustrations; 6 by 9; $3.00**

Forest Protection

By R. C. HAWLEY

This book is the first of its kind in the United States. It is based on the last nine chapters of Hawley's "Practice of Silviculture," Third Edition. However, the material has been rearranged, modernized and considerably expanded. The book is not intended to be an engineering or administrative manual for any of the phases of the subject. Accordingly, it is devoted to the underlying principles rather than detailed instructions for carrying on specific types of work.

Published September 1937 — **262 pages; 6 by 9; $2.75**

Foundations of Silviculture Upon An Ecological Basis

By the late JAMES W. TOUMEY, *Professor of Silviculture, Yale University*; revised by CLARENCE F. KORSTIAN, *Director of Duke Forest and Professor of Silviculture, Duke University*

The original division of this book into two parts has been changed to three parts, dealing with (1) the environment of the forest, (2) the influence of the forest on its environment, and (3) the forest itself. Obsolete material has been eliminated and much of the content has been greatly expanded to include important recent developments.

SECOND EDITION

Published August 1937 — **456 pages; 22 illustrations; 6 by 9; $4.50**

Elements of Forestry

By the late FRANKLIN MOON, *Dean, New York State College of Forestry, Syracuse University*, and NELSON C. BROWN

"Moon and Brown" has been revised and brought up to date by Professor Brown. It now reflects the trend of the times and incorporates the new methods and practices that have grown out of the increasing emphasis upon forest conservation as a project of national importance.

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CONSERVATION CALENDER

Important bills in Congress with action from August 13 to August 31

BILLS ENACTED

S. J. RES. 162—TYDINGS—RADCLIFFE—To permit the States of Maryland, Virginia, West Virginia, Pennsylvania, and the District of Columbia to enter into a compact or agreement respecting the creation of a Potomac Valley conservancy district for the prevention or abatement of harmful pollution of the waters thereof. Passed Senate August 14, 1937. Passed House August 19, 1937. Public Resolution No. 74.

S. 607—MCNARY—To authorize improvement of navigation facilities on the Columbia River. Passed Senate July 22, 1937. Passed House August 2, 1937. Public Law No. 293.

S. 1075—SHIPSTEAD (H. R. 7952—KVALE)—To establish the Pipestone National Monument in Minnesota. Passed Senate August 6, 1937. Passed House August 21, 1937. Public Law No. 364.

S. 2670—PITTMAN—To provide that the United States shall aid the States in wildlife restoration projects. Passed Senate August 10, 1937. Passed House August 20, 1937. Public Law No. 415.

S. 2688—CHAVEZ—To provide for preliminary examinations and surveys for run-off and water flow retardation and soil erosion prevention on the watersheds of the Rio Grande and Pecos Rivers. Passed Senate August 14, 1937. Passed House August 21, 1937. Public Law No. 396.

S. 2863—POPE—To promote conservation in the arid and semi-arid areas of the United States by aiding in the development of facilities for water storage and utilization. Passed Senate August 14, 1937. Passed House August 20, 1937. Public Law No. 399.

H. R. 2014—WILCOX—To amend the Everglades National Park Act. Passed House August 2, 1937. Passed Senate August 14, 1937. Public Law No. 336.

H. R. 3866—SMITH, Washington—To add certain lands to the Columbia National Forest in Washington. Passed House July 19, 1937. Passed Senate August 7, 1937. Public Law No. 257.

H. R. 7618—DEROUEN—Relating to the revested Oregon and California Railroad and reconveyed Coos Bay Wagon Road grant lands situated in the State of Oregon. Passed House July 19, 1937. Passed Senate August 19, 1937. Public Law No. 405.

H. R. 7646—WHITTINGTON—To amend an act entitled "An Act authorizing the construction of certain public works on rivers and harbors, for flood control, and for other purposes," approved June 22, 1936. Passed House July 19, 1937. Passed Senate amended August 13, 1937. Public Law No. 406.

H. R. 8245—WOODRUM—Third Deficiency Bill. Passed House August 18, 1937. Passed Senate amended August 20, 1937. Public Law No. 354.

BILL VETOED

S. 1052—BANKHEAD—To provide for the further development of cooperative agricultural extension work. Passed Senate May 3, 1937. Passed House August 20, 1937. Vetoed August 31, 1937.

FORESTRY

S. 2953—MURRAY (H. R. 8100 DEROUEN)—To provide a measure of damages for trespass involving timber and other forest products upon lands of the United States. Passed Senate August 19, 1937.

GOVERNMENTAL FUNCTIONS

S. 2970—BYRNES—To provide for reorganizing agencies of the government, extending the classified civil service, establishing a General Auditing Office and a Department of Welfare, and for other purposes. Introduced August 16, 1937. Reported without amendment (Report No. 1236) by the Select Committee on Government Organization, August 17, 1937. Passed over in Senate August 19, 1937.

H. R. 8202—WARREN—To provide for the reorganization of agencies of the government, to establish the Department of Welfare, and for other purposes. Passed House August 13, 1937.

H. R. 8277—MEAD—To establish the Civil Service Administration, to extend the merit system, to extend the Classification Act of 1923. Introduced August 18, 1937. Reported without amendment (Report No. 1587) by the Select Committee on Government Organization August 18, 1937.

NATIONAL FORESTS

S. 2583—MCCARRAN—To provide for the acquisition of certain lands for and the addition thereof to the Tahoe National Forest in Nevada. Passed Senate amended August 10, 1937. Reported without amendment (Report No. 1523) by the House Committee on Public Lands—August 13, 1937.

NATIONAL PARKS

H. R. 4724—WALLGREN—To establish the Mount Olympus National Park in Washington. Reported without amendment (Report No. 1568) by the House Committee on Public Lands August 16, 1937.

H. R. 6351—DEROUEN (S. 2513—BYRD)—To provide for the operation of the recreational facilities within the Chopawamsic recreation demonstration project near Dumfries, Virginia, by the Secretary of the Interior through the National Park Service. Reported without amendment (Report No. 1276) July 21, 1937. Passed over without prejudice in House August 16, 1937.

WATER AND STREAM CONTROL

H. R. 2711—VINSON (S. 702—BARKLEY)—To create a Division of Water Pollution Control in the United States Public Health Service. Passed House April 21, 1937. Passed Senate amended August 17, 1937. In Conference August 18, 1937. Conferees disagreed, bill shelved until next session.

THE EXPLORERS

(*Continued from page 477*)

and sixty-nine small snakes. Six of them averaged three feet, six inches in length, three averaged two feet each, and sixty-nine averaged eleven inches each, being a total of ninety feet, three inches of rattlesnake." Rattles were removed from the larger reptiles and retained as trophies of the adventure. Then follows a discussion about the rattles and venom of the rattlesnake.

The Explorers preserve a custom of Sabbath observance which began at the outing of 1872 and continues at the present day. All other days are occupied by activities such as those already described but Sunday morning finds a good number of the campers at the morning service in the nearby village church. All other evenings may be devoted to games of chess, checkers and dominoes or to an animated discussion on any chosen topic of general interest, but the Sunday evening twilight service at The Explorers camp is a tradition among the villagers and summer cottagers.

This service is held on the camp ground which occupies the western slope and top of a knoll, surrounded on three sides by a forest of native hickory, black walnut, gum, several species of maple and oak, interspersed with pines. Through a row of tall white pines one may get a good view of a distant wooded mountain peak, behind which the setting sun paints overhanging clouds with gorgeous colors. In a setting such as this it is awe-inspiring to see the worshippers gather for a service of song and an appropriate address by the pastor of the community church or a member of the camping party.

For sixty-five years the original campers and their successors have enjoyed these annual outings and have, in some measure, contributed to the enjoyment of others who spend their vacation days in the vicinity of their camp.

CONSERVATION IN CONGRESS

(*Continued from page 506*)

President on August 31. Under terms of the latter Act, a Potomac Valley Conservancy District is established wherein the States of Maryland, Virginia, West Virginia, and Pennsylvania may act jointly with the District of Columbia to reduce pollution from sewage and industrial waste on some 14,000 square miles in the Potomac watershed. The activities of the several states will be coordinated through a central body to include a representative of the Federal Government.

Extensive hearings before committees of both houses of Congress revealed widespread support for the Barkley-Vinson bill. This would authorize a comprehensive study of the pollution of all navigable waters, and permit the Federal Government to embark upon a plan for aiding municipalities, states, governmental divisions, and industry to control the causes of water pollution. The House bill as passed on April 21, 1937, was amended by the Senate on August 17, to include certain features of the Lonergan bill consenting to interstate agreements, providing for the creation of sanitary water districts, and directing that minimum requirements for the treatment of polluting material be established. The conference committee to which the bill was sent was unable to reach an agreement during the few remaining days of the session.

The national program for flood control was further broadened by approval of the Whittington Act on August 28, authorizing the Secretary of Agriculture to cooperate with the Secretary of War in preventing soil erosion and retarding water flow in connection with the extensive construction of levees, floodwalls, and drainage structures in the Ohio River Basin, and throughout a long list of waterways covering the entire United States. In addition, the Chaves Act providing similar plans for the Rio Grande and Pecos Rivers in New Mexico was approved on August 23. Projects will be undertaken as rapidly as they can be financed with $500,000 allotted the Department of Agriculture from the appropriations to the War Department for non-military affairs.

The National Park Service is authorized to expend money for the administration, protection, and development of the proposed Everglades National Park in Florida, by approval on August 21 of the Wilcox Act. This strikes out the clause in the enabling Act of May 30, 1934, providing that no money be expended for such purposes until the expiration of five years—or until 1939.

The proposal to create the Mount Olympus National Park on the Olympic peninsula in northwestern Washington, as set forth in H. R. 4724, after resting with the House Committee on Public Lands for six months, was reported favorably on August 16 and placed on the House Calendar. In a manner similar to the proposal submitted to the 74th Congress, this bill would abolish the existing Mount Olympus National Monument with its mountainous area of 298,730 acres, and add sufficient land from the surrounding Olympic National Forest to include a total of 642,360 acres in the proposed park.

This and other uncompleted bills in the House and Senate will retain their respective places on the Congressional Calendars, and will be available for consideration when this Congress assembles for its second session on January 3, 1938.

Aside from the regular appropriations, the session recently closed has only four major acts on forestry or conservation to its credit. One is the extension of the CCC for three years, with an enrollment of 315,000 young men between the ages of seventeen and twenty-three inclusive "who are unemployed and in need of employment," and the Norris-Doxey Farm Forestry Act, for which no appropriations have been made. The other two are the O. and C. Sustained Yield Forest Act and the program for wildlife restoration in the Pittman-Robertson Act, described above.

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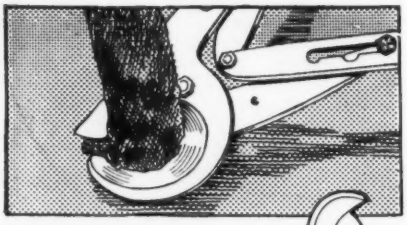

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Address Box 3, American Forestry Association, Washington, D. C.

REDWOODS OF SANTA CRUZ

(*Continued from page* 481)

was commonly pursued immediately prior to the main logging operations, just as is frequently the custom today. The Douglas fir was logged where merchantable along with redwood and manufactured into lumber.

In addition to these three main forms of utilization, another drain upon the forest was the use of large amounts of wood for fuel, by several mushroom industries, the most important of which were lime kilns and paper mills. Some of the most beautiful redwood, along with the poorer trees, was split into blocks to feed the furnaces of these industries. Scattered throughout the forest at all times was also a sprinkling of small woods operators who removed the trees in the form of ties, posts, pickets and various split products.

Considering now the growth and spread of mills, we find three main avenues of attack on the forest by mill operators. Graham's water-power mill, already mentioned, was the first in an opening wedge of small mills which pushed northward up the San Lorenzo River from Santa Cruz. During the '40's and early '50's a number of these small water-mills ran in the vicinity of Santa Cruz and Watsonville.

In 1847 the Mountain Home Mill was started near Redwood City. In the same year Dennis Martin, a member of the first overland wagon train into California, installed a mill in the same vicinity and began to cut redwood at the northern timber border. The eastern flank of this great redwood area was invaded by a party of old Maine millmen and southerners who began operations about ten miles from San Jose near the present town of Los Gatos.

With the loggers threatening the Santa Cruz redwoods on the north and the south at Redwood City and Santa Cruz, respectively, and on the east at Los Gatos, the western boundary of the timber on the rugged Pacific slope of the mountains was the last to escape for long the inroads of the millmen. Even here William Tuffley erected a water-mill on Pescadero Creek in 1852, but although other settlers soon followed him, the cutting in that locality was sporadic and of short duration until fairly recent years.

The comparatively light thinning of the forest in vogue during this era along with the use of slow-moving oxen as motive power in logging left hardly more impress on these wooded hills than had the earlier era. These superficial scars were soon healed by a vegetation cover and these areas now include some of the best stands of redwood second-growth.

By 1875 most of the water-mills had fallen into disuse or had been replaced with steam-power mills, and the third era in redwood lumbering characterized by the use of the high-speed circular saw run by steam power had begun.

The industry was well established by now and men from all walks of life followed the lead of experienced loggers in wresting a living from the forest. This period saw the rise of the powerful timber barons, men who had the foresight to see the wealth-making possibilities in store for the clever timber buyer and speculator. The small millman was soon relegated to the background, depending thereafter upon the favor of the big operator for his very existence. It was not long before the best timberlands in the mountains were under the ownership or control of a few large companies. These organizations with a chain of large mills began a systematic clearing of the land.

It was during the '70's, '80's, and '90's that most of the Santa Cruz redwoods fell before the lumberman's ax. Lumbering was by far the leading industry of the region, and mills turning out both shingles and lumber were operating in every main valley and gulch. The little town of Boulder Creek was a leading lumber shipping center of the Pacific Coast during this era but the trade channels of Redwood City and San Jose pulsed with the stream of lumber traffic also. The millmen were hacking away, too, at the Pescadero, Butano, and Gazos Creek timber stands along the western slope of the mountains, but as markets were less accessible from here and as most of the lumber had to go out by tramway over rocky cliffs to coastwise ships, the timber liquidation was not so great. This isolation no doubt is the principal reason why the remaining virgin timber, with the exception of Big Basin Redwood Park and a small area on Soquel Creek, is confined to these drainages.

At this time ox teams were still the usual form of log-moving power in the woods, and therefore physical damage to young growth by logging was not great. However, the custom of burning during logging operations to clean the trees of bark, to remove the debris, and so to facilitate the removal of logs down skid trails had become a common practice in the redwoods.

This created an ever-present menace to young trees and remaining timber. With such treatment the resulting regrowth on the land was dominantly a brush and woodland mixture for many years following logging. Owing to the inflammable nature of this new growth, the logged-over areas were often reburned every few years, and as a consequence the young forest was delayed for decades if not choked out entirely. With little or no fire protection and with woods filled with loggers, the days were few when the sky was clear of pungent wood smoke, while banners of red on the ridges at night betokened the prevalence and frequency of destructive forest fires. In the brush fields and woodland thickets which soon cloaked the logging burns of this period a new forest of redwood is now attempting to establish itself.

No better proof of the eternal nature of a redwood forest can be seen than the beautiful stands of second-growth trees which have sprung up on some of the better sites despite repeated scourgings by fire. In many locations the Douglas fir was killed out entirely by burning but the redwood sprouts have continued to rise in green plumes from their parent stumps.

Between 1900 and 1910 the old-time ox team and driver gave way to modern and more powerful methods of logging, but not before the former had cleared the bulk of the redwood lands. The demands for greater output per day and a system of logging which would allow longer hauls to the mills

than was possible by animal logging led to the adoption of donkey engines and high-lead cable lines.

When the modern logging engines invaded the woods belching steam and fire, it was inevitable that these monsters of steel with their whiplike tentacles of cable should strip a larger crop of trees from the hills and leave a more lasting mark on the landscape in their passage. Burning of the logging debris continued to be practiced intensively even though most burns were confined to the area of logging operations. Whole hillsides of brush dotted with scattered woodland trees and a few fire-blackened skeletons of former redwoods now outline the recently logged areas. Hidden beneath this dense vegetation cover are tree sprouts fighting to become independent of the inflammable canopy before the next fire shall sweep through.

This rapid form of cutting and burning soon wiped out most of the remaining redwood, and only the awakening of California citizens to the need for a state redwood park stopped the mills from eating into the Big Basin area. The California State Redwood Park is now a protected natural treasury of Santa Cruz mountain flora and fauna. Another small area of redwood amounting to about half a section has been put aside in San Mateo County Memorial Park. This tract and a few acres at Big Trees near Santa Cruz constitute the only other natural forest lands in this mountain range that are under public protection and available for general use. At present only one sizeable area of commercial redwood remains in the Santa Cruz Mountains—that in the Butano and Pescadero drainages. Two of the existing sawmills are cutting into this primitive area at present, while another is rapidly swallowing the island of timber in Soquel Creek.

The California Forest and Range Experiment Station, in connection with its statewide forest survey, has graphically portrayed the visible effects of lumbering and fire in this region. It has been able to estimate the area of virgin redwood at the time of the Spanish Padres as comprising 650 square miles. This has dwindled during the lumbering period to about fifty square miles, or to eight per cent of the original area.

The present logged-over area approaches 400,000 acres, or more than one-half of the area of Rhode Island. Only approximately fifty per cent contains any appreciable amount of young timber at present. The remaining fifty per cent, which includes the recent cuttings, supports a cover of brush and woodland species and a small area of cultivated land. In the aggregate these non-timber areas cover about 200,000 acres. Remnants of commercial timber outside of the state and county parks still exist in scattered blocks but are rapidly being absorbed into the large body of cut-over lands through the hungry maw of a yet active lumber industry, and in shortly over two decades at the present rate of cutting will be wiped out.

Today the romance and tradition of the early days are preserved not only in a rich legacy of memories and records of the people, but also in the story that may be read in the present condition of the vegetation, and in such vestiges of the industry itself as remnants of old mills, log-roads, and place names. The fast-moving story of this industry spans a scant century, but a record has been indelibly traced that will remain on the Coast Range forests of Alta, California, for several centuries to come.

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WILDLIFE AND CYCLES

(*Continued from page 497*)

have been but ten years each. At times it has stretched to thirteen years.

Animal life is a varied and complicated thing. But of all its scores of phases and activities, only two can be easily measured, populations and bird migrations. Bird migration has long been measured by bird students as a hobby. It has always been easy to record arrivals and possible to record departures. Many records of bird migrations made over periods of many years are published or available. They lend themselves well to study in cycle work, and have been freely used in my own work.

Population figures are not so easily obtained because of the greater difficulty of determining them accurately. Many records, however, are available, and more are being taken as time goes on. An indirect method of estimating population levels is through the use of fish catches, fur records and game-bags. It is surprising to note how faithfully these returns indicate the actual populations. The testimony of old hunters and natives of a territory yields information of some value, even though it is purely objective.

Bird migration has been conventionally thought of as occurring at more or less definite times each spring and fall. The time at which migration began for any particular bird was considered definite, varying only according to weather. While we have always thought of a cycle as being a complete round-trip from the bird's breeding grounds to its wintering grounds, upon checking the dates of arrival and departure we find that this migration period is subject to definite fluctuations. It shifts from early to late and back again in definite rhythms. These fluctuations are called migration cycles in order to show their similarity to the cycles in population densities.

Population exhibits a similar set of cycles. The shorter, called "seasonal cycles," follows the increase in number of individuals which occurs with the breeding season and advent of young, and the subsequent decrease as the population slowly returns toward the original level as the next breeding season approaches. The longer cycles, called "record cycles," become evident as the records kept over a considerable number of years are examined. If yearly population records be compared, it will be noted that the numbers do not remain the same. In numerous species—we cannot yet say how many—these yearly changes are found to occur in cycles. Thus a time of abundance is followed by a scarcity, with a subsequent return to abundance. This cycle of events occurs with faithful regularity.

There appears to be a general tie-up among the cyclic phenomena exhibited by animals. Cases in birds indicate that migration fluctuates in tune with the population levels. Reproduction shows indications of relationship to the cycles; and while information on reproduction efficiency is scant, it leads to an expectation of reproductive pulsations.

Years ago astronomers began the first investigation of cyclic phenomena. Early studies on the readily apparent sunspots showed them to be definitely cyclic. This led to further exploration of the solar cycles and for terrestrial cycles dependent upon the sun. These terrestrial cycles have been found to dovetail into the solar cycles in many fields, and have therefore been deemed to be dependent upon them either primarily or secondarily. Any other hypothesis hardly seems permissible.

The relationship between solar and terrestrial cycles — temperature, tree-growth, precipitation, magnetism—seems well-established. Present work is rapidly establishing a relationship between the solar cycles and animal cycles. Those of the sun-spots affecting animals are now known to be the 5.65-year, the 11.3-year, the 22.6-year and the 68 to 73-year cycles.

In the snowshoe rabbit populations, the 11.3-year, the 22.6-year, and the 68-73-year cycles prevail; in the ruffed grouse, the 5.65-year, the 11.3-year, and the 22.6-year cycles. Although these animals exhibit cycles as stated, they do not all necessarily exhibit all or the same cycles. Latitudinal shifts of the cycle have been found in many species. The ruffed grouse exhibits the 11.3-year cycle in the north and the 5.65-year cycle farther south.

It appears from the work of cycle students that many species of animals, not only game but non-game birds, fur-bearers and fish, show cycles of abundance and scarcity which determine to a great extent the numbers to be found from year to year. It is not yet possible to say just what causes the cycles. It is too deep a question to answer in one breath. No one has yet explored the vast field of nutrition, of physiology and endocrines, of the action of ultra-violet rays on the vitamines available to the animals, of the effects of radiation, of temperature changes, precipitation and a host of other factors. We know definitely that a lessening in the solar output of ultra-violet rays occurred before each of the past two down swings. The power of the sun seems to act upon the delicate physiological balance of the animals but beyond this we have little firm foundation for our opinions.

We have so far regulated hunting seasons on the assumption that the next year will be like its predecessor, thus putting us a year behind in closing seasons when the birds are scarce and a year behind in opening them when the birds increase. The population of the next year will be similar to that of the present with a plus or minus change according to the cycle, whether it be on the up swing which brings more game or on the down swing which brings less game. In 1936 a closed season was placed on the cottontail in many parts of its range on the heels of a downswing in its cycle. Next year it may be squirrels or it may be pheasants that are slated to go down, depending upon the stage of their cycles.

The present and past action of the cycle upon partridge and other game regulations has been to throw the whole efforts of legislators, commissioners and wardens into a terrific turmoil. No sooner has a regulation been promulgated than the progression of the cycle has changed the exigency the regulation was designed to meet. The usual symptoms of the approach of the next low is a scattering series of reports trickling into game departments, newspapers and pool rooms that grouse are getting scarce. More reports come and finally an avalanche of demands that the season be closed and that something be done. Rumors fly thick and fast: the birds have been shot off, they migrated, were poisoned, hawks and owls, foxes, disease, cold weather, hot weather, drouth, rain, and so on endlessly. The truth is simple; the expected low has arrived.

When the cycle reaches its low, it has but one way to go—up. The population will stay low despite all present efforts to increase it until the proper time for the cycle to upswing again. Usually the closed season, warden vigilance or new fire patrol gets the credit. But when the cycle has again reached its peak, it also has but one way to go. This time it is down. The wardens, the seasons, the fire patrol cannot prevent the downward thrust. It responds to a higher law, higher than all our regulatory regimes. There can be no permanent population peak until we know more than we do now.

At the peak of the cycle, snowshoe rabbits often approach and sometimes exceed a thousand rabbits to the square mile. I have many times visited areas at the low period and have been unable to find more than two or three rabbits by intensive hunting; sometimes not even a track in the snow could be seen. In 1931 during the recent high, the Wisconsin Conservation Department delegated one of its wardens to make a ruffed grouse census on several northern sections. He used the King method and reported a population exceeding five hundred birds per square mile. I spent several days in the same area four years later—during a low—and could not find a single bird!

Just what comparisons can we make from this? I know of many states where emphasis and pride is in the rearing and release of five, ten or fifteen thousand pheasants at a game farm. This seems like a lot of birds but it is a mighty puny effort compared to the cycle. The upswing of the cycle can put that many partridges on half a township and throw in thousands of rabbits to boot!

There are no actual figures of the numbers of game lost throughout the whole country during the recent down swing of the cycle either by actual die-off or because of those that were never born or never hatched. But if we guess at a half a billion, we shall not be guilty of overstatement. Beside this mountainous pile of game, the whole output of the game farms seems but a tiny umbrella in a tornado. Though the thousands of dollars and tons of energy spent in propagation seem insignificant alongside the mighty cycle's workings, they dwarf the paltry hundreds of dollars and few scattered research efforts on the cycle problem that are the watermark of a supposedly conservation-minded people.

The logical thing for us to do is to find out what mechanism causes the upswing of the cycle and put it in operation to raise the population or smooth out the lows. The exact cause is still a mystery, but if adequate research is applied, it will not long be a mystery. And once we know the answer, it may well be possible to raise, not a few thousand birds in a pen at two dollars apiece, but millions on the open range for an insignificant sum.

Though we admit that we do not understand the causes of cycles, can we consider them in our administration and management? I think that we can and that we would be extremely negligent not to do so. It appears to be biologically sound to have a long open season and high bag limits at the highs. It might even be feasible to have a season of several months and perhaps no bag limit. It is a matter for study; but we can feel safe in thinking in terms of longer seasons and higher bags than at present are the vogue during the highs.

There appears to be no reason why we cannot expect the future to continue as the past. In the case of the ruffed grouse in the north, we find a high occurred in the years 1912-4 followed by a drop-off, another high in 1922-4 followed by another drop-off. The most recent high occurred in 1932-4 with a low at present. Thus the past two intervals have been but ten years each. We should expect another high in 1942-4 at this rate. If for some reason the solar cycle should return to its long-time average, we should expect the next high in the sequence to be delayed a year or so. We cannot state the exact year that the peak will be reached; we can state that another peak will come at the approximate interval of the others.

WILDLIFE EXPEDITION TO MEXICO

In charge of a scientific expedition for the Biological Survey in which the Chicago Academy of Sciences, the Smithsonian Institution, and the National Zoological Park are cooperating, Stanley P. Young, chief of the Survey's Division of Game Management, left Washington on September 9 for the Carmen Mountain section of northeastern Coahuila, Mexico.

The main objective of the expedition will be wildlife photography similar to that conducted in northeastern Louisiana three years ago, when for the first time, so far as known, Mr. Young lured wolves into taking their own pictures at night. Other objectives will be the collection of mammal specimens for the Survey and the other scientific agencies concerned, and the capture of live mammals for the National Zoological Park in Washington.

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PLANNING VALLEYS OF LITTLE RIVERS

(*Continued from page* 489)

through a marsh to a lake has gained two or three hundred acres of onion land worth, perhaps, a hundred dollars an acre, and ruined an equal amount of resort land worth a thousand dollars an acre.

This situation shows the absurdity of our existing law, which allows any two farmers to get up a petition and put in a drain without considering what effect the drainage may have on the valley as a whole. Most drainage basins extend over more than one county, and the state, not the county, is the logical unit for settling such questions.

The question of water levels covers also the question of flood control. The National Resources Committee has recommended an expenditure of $4,162,000,000 for curing the flood situation. This problem is largely the problem of the small streams that make the great rivers. It is necessarily a costly proposition. A small stream with a flood flow of 10,000 cubic feet per second—the Huron has 8,000—would cover an acre one foot deep in a little over four seconds, about fourteen acres a foot deep in a minute, and 840 acres a foot deep in an hour, or twenty-four feet deep in a day. To control this water requires an expensive dam, and the purchase of rich bottom land.

However, to hold back floods by building great reservoirs is always an expensive and unsatisfactory method of flood control. A better solution lies in contour plowing, the reforestation or regrassing of the hillsides, and the restoring of many of the original lakes and marshes for water storage.

There is another possibility, at least in this area, that has been little considered. Probably the majority of farms have a small stream or set of springs, which dammed would make a pond of one to ten acres covering a plot of marsh. Such small ponds will raise fish and muskrats and water lilies, offer a haven for shore and water birds, a place for the cows to drink and a swimming hole for the children. In many cases they would be an advantage to a farm. In the aggregate they would help mightily with the floods. Perhaps a federal appropriation to encourage farm fish ponds with excess capacity for floods might go as far as the building of great dams on the larger streams.

Power dams on a stream are in general an advantage. They assure a body of water large enough for swimming and boating and maintaining the larger fish, that are not able to survive in a shallow stream. If the water levels are maintained on these ponds, as they are on the Huron, and the sewage is kept out, the shores tend to develop into resorts or residence areas. But if the water levels are allowed to run down by operating the turbines for too long a period during dry weather, so that there is a mud flat around the edge, they lose most of their residential and recreational values. This indicates a public interest, and that there should be supervision.

There are nine power dams on the Huron, at each of which the power house has a large turbine and a little turbine for the low water of summer. During the dryest part of the season even this small turbine may be operated for only one or two hours a day. When the sluice gates are shut down, it shuts the water out of the stream below. In a number of cases one dam floods back to the dam above so that this does not matter, but in other cases when these gates are closed, it shuts the water out of the river for many miles, thus driving the fish out of the area, and making boating, swimming, picnicking, and camping either impossible or unattractive.

There are two possible solutions, to allow the minimum flow of the river to proceed at all times, or to build a series of low dams, so as to keep deep places to which the fish can retire at such times.

Considering the number of people who like to fish and the number of studies that have been made, it is astonishing how little we know about the fish problems of any particular stream. The Fisheries Research Institute of the State Conservation Department is located at Ann Arbor, but they tell me they know very little about the fundamental problems of a maximum crop of worthwhile fish on the Huron. For instance, wall-eyed pike are numerous in certain ponds on the river and not found at all in a number of others. Why not? The river is fed by springs over considerable of its course. Perhaps the rainbow trout would flourish there with a certain kind of planting. No one seems to know.

What is the temperature of the water in the deeper ponds and in the flowing stream in summer? These are determining factors with many kinds of fish, but no one has ever made sufficient tests to be sure.

Wisconsin has been fertilizing the water of certain lakes and ponds so as to increase the supply of plankton. The indications are that this practice should be more generally followed. In some way it is necessary to provide at intervals deep holes in shallow streams if the larger fish are to be retained. This may be done by wing dams. There must be satisfactory places to spawn, and there must be places of retreat under the bank or into brush or other cover. Each of these facts indicates the need of intelligent care of our streams, if they are to yield the crop of fish they should.

Probably the most important measure for increasing the fish is the protection of the spawning season. The fact that here in this metropolitan area we know so little of our real problems indicates that there may be some problems left over for the country at large.

Again in this metropolitan valley with its great university and teachers college, both with strong departments of zoology and botany, one would think we should have our problems of wildlife pretty well solved. To have abundant wildlife means food and protection. We have 146 lakes in the valley, beside the river and its many tributaries. Each one of these represents a problem in suitable aquatic and litoral vegetation to maintain a maximum of water and shore birds and mammals. We know very little about this situation. Neither the state nor the counties have any control over these lakes, but if private owners knew just what to do to increase the game supply much would undoubtedly be done.

A sanctuary not merely protects wildlife; it also tames it so that it can be observed. There are two sanctuaries in the valley at present. One a private one for wild geese, the other a general one in a national parks project. There are at least three other suitable and desirable locations.

Every park and picnic place on the Huron has been used to capacity almost as soon as opened. There is every reason to

believe that this demand will increase. The eight hour day leaves four hours of daylight during the summer after the working day is done, and the five day week leaves two full days for recreation at each week end. In densely settled sections, it may be that almost the entire bank of the stream should be in public ownership.

Perhaps enough has been said about fishing and boating. Beside these our rivers should provide picnic and camp grounds, at frequent intervals, with a separate place for trailers. There should be frequent swimming holes with corresponding provision for skating and tobogganing in winter.

In order for the stream to be as appealing as possible, the water must be clear and the banks in the main, well wooded. There are a great many varieties of water lilies—at least fifty—that will grow in most of our streams and ponds. Once started they will care for themselves.

On the Huron there are about fifteen islands and an equal number of areas that are cut off by the railroad and can be reached only from the river. If the river becomes more popular these would offer excellent picnic sites. The only profitable economic use at present seems to be reforestation, as is also the case with the bluffs of the river, which are often too steep for any other use.

We have been laboring now for two years in preparing a guide to the Huron Valley. This may not seem necessary for so small a river basin, but it is astonishing how little most people know about it, and yet how many really interesting things there are here. Our guide includes something of its history, ancient and modern, its geology, wildlife, forestry, engineering problems, its points of interest, industries, drives and opportunities for recreation with plans for the improvement of the valley as a great recreation area for the metropolitan district of Detroit.

It has always seemed to me that knowledge of things nearby is more valuable than knowledge of things far away, and that it is desirable to know pretty intimately any area that touches one's life often. I believe that such a guide would be desirable for hundreds of river valleys of America.

I have recently gone over many reports from state and national commissions on water resources. While they differ widely, nearly all of them point out the fact that our water laws are not adjusted to present conditions. Most of them are built on navigation or power. But there is not a navigable river in the interior of Michigan, and the building of power dams on small rivers with low head is no longer profitable.

The problems of our waters are quite as many and difficult as the problems of our farms. Through our resorting trade, which is built around them, they yield a larger financial return. There is quite as much reason in this state for a Department of Waters as for a Department of Agriculture.

However, the simplest solution of the situation would be to attach these new duties to the Department of Conservation by providing a supplementary staff, mostly engineers and landscape and recreation men, for the purpose. Our present water code is in the horse and buggy stage, and the whole country is waiting for a law, built on modern conditions, in which public use is nine-tenths recreational.

A river valley is a natural division. A county is a political division. The different parts of a county may have nothing in common; but there are certain problems that are common to all parts of a river valley. They will not solve themselves. Some of these have been discussed in what has gone before. There is a governing and planning body for the Tennessee Valley and for many of the valleys of Europe. Some such body is needed for many if not most of our rivers.

MATTRESSES FOR OLD MAN RIVER

(*Continued from page* 498)

this shore builds up. Where it is desired to induce additional filling by retarding the current artificially, mattresses and dikes are used. The dikes consist of a line of piles extending out into the stream, the piles being driven in clumps of three and connected by stringers. Several dikes are usually placed in a series parallel to each other and at about right angles to the shore line. Without mattresses, however, the piles would often be undermined by the current and washed away. The first step, then, is to sink the mattresses in place with stone and then to drive the piles right through them.

Both pine and mixed hardwoods are used in the manufacture of mattresses for Old Man River. Among the hardwoods used are red oak, white oak, sycamore, elm, red gum, black gum and cottonwood.

The Forest Products Laboratory at Madison, Wisconsin, as a part of its work on the more efficient utilization of forest products, has just completed a survey to determine whether blackjack oak, a common weed tree of the South, could be used for mattress lumber in place of the millions of feet of good hardwoods and small pine now employed.

Offhand it would appear that blackjack oak could meet the requirements for mattress lumber, since they are not exacting. The mattress being wholly under water is not subject to decay except at the extreme shoreward edge which is covered with paving stone. Once laid and properly weighted down with stone no great demands are made on it for strength. Tests show that blackjack oak can be woven. Despite the lack of rigid requirements, however, blackjack oak was found to be unable to compete both on a price and utility basis with the woods now being used.

The consumption of mattress lumber varies from year to year according to the amount of repair work necessary. As an indication, the Army contracted for 2,250,000 feet in 1936 for dike work on the Mississippi between St. Louis and Cairo. Two or three times as much was used by contractors in this territory for bank protection. The Kansas City district engineers estimate a total consumption for 1936 of 9,000,000 feet of mattress stock in their district, making a total in 1936 of from 15,000,000 to 18,000,000 feet for these two districts, which, of course, comprise only a small part of the Mississippi and major tributaries.

The protection work planned on the Mississippi and Missouri Rivers is largely completed. This means that within a few years work will presumably be limited to requirements for annual maintenance and repair and the total consumption of mattress lumber will be reduced. It seems certain, however, that on Old Man River alone several million feet will be required almost indefinitely every year.

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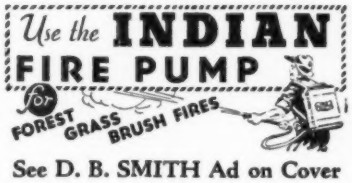

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Forestry Transfer

(*Continued from page* 494)

stop the continued jealousy between departments of the Federal Government and in the interest of the taxpayer and efficiency eliminate as much as possible of duplication and waste. Instead of creating more departments and new departments, instead of adding bureaus and divisions, it is time to eliminate, and where efficiency will permit to consolidate.

"Senator Byrd of Virginia has covered these matters so clearly in public addresses that it would be a waste of time to mention them here. I must state, however, that for almost thirty years I have witnessed conflict between bureaus of government with resultant duplication and waste, and more serious, loss of respect of the public and decline in efficient service.

"Instead of having the courage to say for once and for all that the bureaus dealing with land use and soil conservation, farm production and marketing, and those functions of government which are related primarily to organic resources belong to agriculture, and that the bureaus must stay there, this bill simply invites a continuation of a policy which under a half dozen administrations has interfered with governmental efficiency and wasted the resources of the people.

"Therefore, with all the earnestness at my command, speaking for the smallest Grange, whether it is located in Montana, Wyoming, Kentucky, or New Hampshire, or for the largest Grange of about a thousand members in the State of New York or in Maine, I want to assure the committee that our membership is tremendously in earnest on the program adopted again and again in our organization, and we ask that this committee take no action that would continue governmental duplication, extravagance, waste, friction, bitterness, and misunderstanding. We are unalterably opposed to the creation of a Department of Conservation for the reasons enumerated."

Trail Rider Country

(*Continued from page* 484)

tion—the third to explore this fascinating country—left Albuquerque on August 3.

The last great unspoiled country in the West to lure the Trail Riders has been called America's most beautiful wilderness —and rightly so. It is a wildwood built on a grand scale—a rugged, broken mass of peaks from the glacier crowns of which course many beautiful streams, forming valleys clothed with magnificent forests. It is the Olympic Wilderness of the Olympic National Forest and the Olympic National Monument, in the State of Washington. The expedition to visit this wilderness this summer was the second.

The East, too, has its Trail Rider country—though on a smaller scale. Two small parties explored the wilder regions of the Great Smoky Mountains—one in June, the other in September.

Altogether, eighteen expeditions have explored Trail Rider country under the direction of The American Forestry Association. Next year perhaps seven more will ride, and the following year—who knows? As new Trail Rider country is opened up and as more people become aware of their opportunity to explore it under the direction of the Association, there is no limit to the extent these little kingdoms of the primitive, untouched by the great spoilers, may serve mankind.

WHO'S WHO

Among the Authors in This Issue

ALDO LEOPOLD (*Marshland Elegy*) is Professor of Game Management at the University of Wisconsin, a distinguished forester and wildlife specialist widely experienced in the administration of forests, game and natural resources. His saga of the crane is poignantly handled and the picture he draws of this great bird will not be forgotten, though he vanish from the marshland.

Aldo Leopold

EDWIN F. WEAVER (*The Explorers*), as "one of them," tells the story of this unique club of lovers of the outdoors, which has held together since 1872, and of which he is custodian of its historical archives.

HENRY S. CURTIS (*Planning Valleys of Little Rivers*) lives in Ann Arbor, Michigan, where for the past three years he has conducted social surveys of Washtenaw County and of the Huron River Valley. Dr. Curtis was one of the organizers, and was first secretary of the Playground Association of America, now the National Recreation Association.

R. C. WILSON (*Redwoods of Santa Cruz*) was reared on the North Dakota plains. Graduating from the University of California in 1934, he has since been associated with the California Forest and Range Experiment Station on the Forest Survey and Vegetation Type Map.

R. C. Wilson

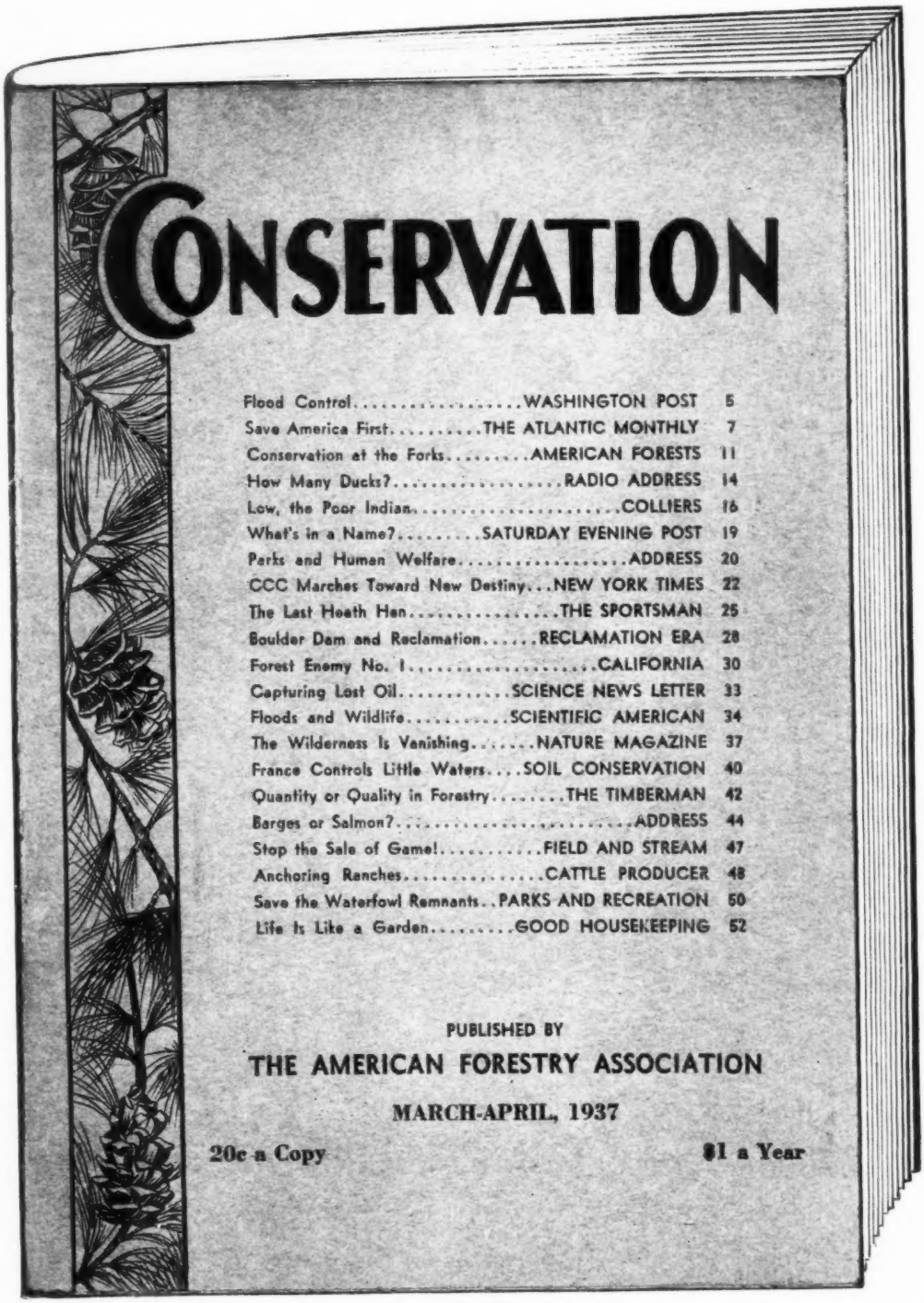
GEORGE A. SIMMONS (*The Trees of Turkey Run*) for the past two years has been engaged in Emergency Conservation Work in Turkey Run and other Indiana State Parks.

LEONARD WING (*Wildlife and Cycles*) is connected with the Division of Wildlife Management, of the University of Wisconsin, where he has charge of the wildlife cycle investigations. Formerly a member of the staff of the Museum of Zoology, Ann Arbor, Michigan, Mr. Wing has done considerable research on the wildlife of Michigan, Wisconsin and Texas. He organized the Audubon Research Fellowship programs, two of which are now active with the plan for two additional ones each year.

ERLE KAUFFMAN (*In "Trail Rider" Country*) is assistant editor of AMERICAN FORESTS.

E. M. DAVIS (*Wood Mattresses for Old Man River*) is senior wood technologist at the Forest Products Laboratory at Madison, Wisconsin.

THE COVER—In Prince Albert National Park, Saskatchewan, Canada. Courtesy of the Canadian Department of the Interior.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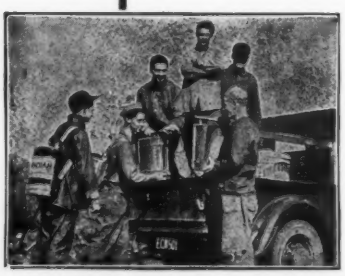

CCC CAMPS USE INDIANS

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